LIST OF STUDENTS WITH DETAILS OF COURSE INCLUDED EXPERIENTIAL LEARNING

&

REPORT OF FIELD VISITS AND SAMPLE OF PROJECT WORK

VIJAYGARH JYOTISH RAY COLLEGE

Vijaygarh Jyotish Ray College

Name of the student	Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Experiential learning through project work/field work/internship outside the syllabus
Amreen Firoz	BSc Microbiology	MCBA	Project Work	DSE-B4	
Debjeet Chakraborty	BSc Microbiology	MCBA	Project Work	DSE-B4	
Dipayan Chatterjee	BSc Microbiology	MCBA	Project Work	DSE-B4	
Kaushani Chanda	BSc Microbiology	MCBA	Project Work	DSE-B4	
Subhajit Nath	BSc Microbiology	MCBA	Project Work	DSE-B4	
Dipshikha sarkar	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Sutapa Basu	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Momina khatoon	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Ranojoy Chakraborty	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Shibnath Naskar	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Sreemayee Chattopadhyay	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Manjusri Bhunia	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Aritra Kundu	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Payel Mondal	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Souvik Mistry	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Debojit Ghosh	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Aditi Das	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Utsav Sarkar	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Sayan Samanta	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Bivash Mondal	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Rajdeip ghosh	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Puja kumari jha	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Tania Mondal	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Akash Raj	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Saheli Basu	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Sirshendu Purkait	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Kinshuk Das	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Amlan Kishor Podder	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Medha Paul	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Ruchita Saha	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Chirantan Dasgupta	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Dipshikha Sarkar	Bsc Zoology	ZOOA	Animal Biotechnology -Practical(Project) & Animal behaviour and chronobiology- Practical (Project)	ZOOA-DSE-A-3-P, ZOOA-DSE-B-3	
Debadyuti Mahapatra	BSc Chemistry	CEMA	Dissertation	DSE-B4	

Rajyasri Mitra

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Sumon Chanda	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Subhabrata Maity	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Sharonyo Roy Chowdhury	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Tamalee Naha	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Sneha Kundu	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Payel Chatterjee	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Madhurima Das	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Supravat Haldar	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Aniruddha Das	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Arijit Dutta	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Koushik Maity	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Debnath Gayen	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Akash Datta	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Tridha Ghosh	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Mintu Halder	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Puja Das	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Sayantani Chakraborty	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Jayanta Mandal	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Sritama Paul	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Swarnendu Das	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Debayan Ghosh	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Lipika Sardar	BSc Chemistry	CEMA	Dissertation	DSE-B4	
Amiya Sasmal	BSc Chemistry	CEMA	Dissertation	DSE-B4	
NEHA SINGH	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
AKANKSHA SINGH	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ANITA PURKAIT	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ANJALI JHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ANJALI SHAW	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ARPITA MONDAL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ARTI DAS	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
DIKSHITA BORA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
GAZALA KHAN	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
JOYSREE BHOWMICK	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
KHUSBU KUMARI	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
MANJUSREE DAS	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
NISHA KHATOON	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
PRERONA SAHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
REMPA DAS	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
RITU SAHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ROZINA KHATUN	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SAYANI MALLIK	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SWABNAM MISTRY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
TUHIN SAHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ABHIRUP KUNDU	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ABIRVAB KAHALI	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ADARSH MISHRA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ANKIT JAISWAL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ANKIT KUMAR	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ARCHISMAN DUTTA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ASHISH ROY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

BISAL PAUL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
BISWAJIT MISHRA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
BUBAI HALDAR	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
DEBAJIT ROY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
DEBARGHYA BHATTACHARJEE	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
DEBASISH DEBNATH	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
DEBOTTOM ROY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
DEEP BALMIKI	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
DEEP BHOWMICK	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
HIMADRI ADHIKARY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
JADUPATI DAS	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
JAYBRATO MUKHERJEE	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
JITU SINGH	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
KAUSHIK DEY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
KAUSTAV CHAKRABORTY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
MAINAK CHAKRABORTY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
MAINAK DEY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
PARTHA PRATIM DHAR	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
PRODIP HALDER	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
RAHUL GOSWAMI	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
RAJA SHAW	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
RAJEEV RAY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
RANAJIT DEY	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
RANJAN DAS	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ROHAN SHAW	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
ROHIT SARKAR	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SAMIR KOTAL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SASWATA PAUL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SAYANTAN CHATTERJEE	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SK NASIM	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SOMNATH BERA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SOMRAJ GHOSH	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SOUMADIP SAHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SOUMYADEEP GHOSH	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SOURIK SAHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SOUVIK BANIK	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SOUVIK MONDAL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUBHADEEP BHOWMICK	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUBHADEEP DUTTA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUBHADEEP GUHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUBHAM BHAGAT	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUBHANKAR KARMAKAR	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUBHRANEEL SAHA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUGNICK GUHA THAKURTA	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUMIT PAUL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUNANDA DEB	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUNNY BISWAS	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
SUPRIYO BHATTACHARJEE	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
TUHIN KUMAR MONDAL	B.Com(Hons.)	B.Com(H)	Project Work	CC 6. 1 Ch	
Pranav Menon	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Rajyasri Mukherjee

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Abdur Rob Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohit Bhagat	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tiyanshu Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayandip Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
NILATPAL OJHA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAYAK MANDAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rishav Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sima De	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anurima Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ahana Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Swastik Dutta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Isha Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nilangsu Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Preyashi Deb	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deboraj Pramanick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anushka Banerjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shrabona Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Neha Gupta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Snehasish Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayani Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Reshmi Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tamagna Ganguly	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sweta Purkait	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shaanjona Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aritra chattopadhyay	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumyadeep Pal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mili Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Vidyanand Jha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayoni Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayantan Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ruddrava Banerjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sukanya Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Roopkatha Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudhir Kumar Sharma	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tusashi Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Srijeeta Guha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ritam Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mayukh Pathak	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanchita Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Prithiraj Barik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rupsa Bose	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rahenuma Khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Namrata Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kushal Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAPTARSHI ROY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Samar roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Afroza Parvin	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Monjari Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aindrila Kar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pitam Howlader	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Sayan Mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanjana Bose	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sneha Majumder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sangita Bera	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anwesha Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Titas Banerjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Diya Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deya Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Zeba Anwar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rabindra nath Gayen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Amit paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tirtham Dutta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shrutokirti Patra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Simran Das Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tapaja Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arbind Pandey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Akshita Dhar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riti Chatterjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Avishek Baidya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debojyoti Sengupta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhishek Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pankaj Paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debasish Nath Sharma	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jit chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Chayan Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Megha Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debosmita das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sreeja Pal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Koyel das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sushmita Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudeshna Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sutasam Jana	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Payel Jana	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nandita Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pragyodip Nandy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ankan Acharjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ARIJIT MONDAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sroddha Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Susanta kayal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arkanshu Boral	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kajal maity	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Depayan Debnath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Payel Bhowmick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bibek Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kakali bera	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PINKI SEN	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhankar Dutta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ritwika Maity	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sujoy Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
CHANDRARATI DAS	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Rajyasri Ghosh

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Sandip kumar dubey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aditya parui	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tuhin Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
MEHERIN IQUEBAL SIDDIQUE	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sharmistha Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debojit patra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Santapi Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saurav Kumar Rai	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pratim Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nitin Bhagat	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumik patra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Laboni Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biswajit Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
riddhi chand	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhishek kayal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Victoria singha Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arpan samaddar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anisha Parvin	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rishita pal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Atanu Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rishika Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Megha Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suvajit Debnath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nishan Ali Hazari	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Raja naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soham Gayen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sandipan halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Khan Aziza Parveen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anik Kumar Manna	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhajit dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PAPIYA GHOSH	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jhuma Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mampy bahadur	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aniket Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ankita Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shruty Majumdar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PARTHA MRIDHA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ayan Gayen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipanjan paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Laxmi mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rinki Sen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bipasa Aich	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pratap Chandra chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ankita Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subham Dewanji	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mrinal paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Atashi Nandy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAMIK GANGULY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shrabanti Kurmi	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Srijita Banerjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAGAR SARDAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pratik das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Adittya Routh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumi Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rahul Mahato	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rajdip kundu	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sutanu chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aritra Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aparajita Bhattacharya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tiyasha Pradhan	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Moli Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rukshar khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhash Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAHANA PARVEEN	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shrabanti Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipanjan Kayal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suva Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumaditya Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Krishan Dutta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sony yadav	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Astomi kayal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tarikul Gazi	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Amitra Sundar Bahadur	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sumitra Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nabin dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rajat Singh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bijoy Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Payel Nath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suvojit Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Avick Ghorai	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deep Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
JIT SARDAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Alisha Asrik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAYANTAN ROY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Srishti Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Durjay bala	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sunil Kumar Mahato	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ritoshree Bhattacharjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Isha Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
krishna sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pritam biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saikat mitra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ARIJIT BANIK	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipak Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suraj shaw	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Poulamye Paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Chandan Mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PRITIKA SARDAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Himangko Acharya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Rajyasri Mitra

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Pratun Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohit thander	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kiran Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Puja haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kushal Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ARPAN KARMAKAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anindya Bose	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jaya sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anima Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suvham das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanchita Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ankur Bhattacharyya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saikat purkait	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mousumi maity	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Madhumita nag	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhankar Mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shreya Bhowmick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jayanta naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Samar sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debolina Poddar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ishita Ari	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Barnali Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rajasree Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sambaran Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riddhi Roy Choudhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Lenard Bhakta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Koushik sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Neha shaw	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bidisha karmakar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mab das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Supratik ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipak Mahanta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anwesh De	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arnab Jodder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayani paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudeshna naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Naha Routh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayan Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhishek Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bipasha Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sikha Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sumit Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arpan Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanjib Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aritra Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Surojit mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nitish Narayan Basu	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suparna Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sheuli Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Rajyasri Mondal

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Arnab Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arpan Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shashanka Gharami	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Manas Adhikari	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhadip Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biswambar Patwari	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arpan Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nirmalya Maity	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Niladri Paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Surojit haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priti Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Amiya mistry	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SHYAM SUNDAR PURKAIT	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Somnath Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ATASHREE MONDAl	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sristy kar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
sabana khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanghamitra Adak	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanchita roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kousik Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tuhin Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudipta panda	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Susmita halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Paromita Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Esa Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deep Kumar kayal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biswajit maity	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ipsita roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shrabanti Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rahul Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sreya Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ishani karmakar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pratima Dhuri	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biprotip Mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
BISHAL DAHAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Payel Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Astitya Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sajib Kumar Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suman das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ankita Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudarshan Thakur	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Astik Majumder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Swarnajit Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Souvik Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Swapan mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bishal haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Provhat bhadra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mohini Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Susmita Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mousumi Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Rajyasri Mitra

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Biswajit Bar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bidisha Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Piu halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Prodip nath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arati Mallick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biswanath Singh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudipa Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bipra Nayani Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rishita Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sandipan Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sushmita Acharya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SUKANYA CHAKRABORTY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rajib Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bishal paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debkumar sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayan saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arunima Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kaushani Bhattacharya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Maheshwar Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhadeep kar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Souvik mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SARAMA PRAMANIK	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Monalika Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rakhi Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka Samanta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biswajit Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayan Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Wrishov Mitra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rabeya khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bijay sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aditya paswan	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Raj das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mainak Goswami	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumen Mojumder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayan shome	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Madhumita Jana	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kalyani Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rahul Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rimpa Mazumdar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SHUBHRANIL GOSWAMI	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kamalika Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sujan sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bikash das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhankar Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Susmita halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sonali Nath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Taniya Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shreya Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pratima Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rajib Baidya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Kaushik Mallick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shouvik Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arjun Rana	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohit Majumder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sneha Sil	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PRITAM MONDAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayantani Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priya Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arindam ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sharmistha halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Madhumita Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Payel purkait	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mrinmoy samadder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riya Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
VASKAR DAS	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipan Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pooja Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Samadrita Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhajit Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kallol Chakroborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sampa Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jyoti Mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rupam Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jemima parvin	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Asish Naiya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mahuya Bachar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ARITRA SAHA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arundhoti Baidya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ayanika Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumodip Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Souvanik sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shreya sasmal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayarneel Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saikat Paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Apu kamar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Megha Guchait	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Akash Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipankar Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Umesh Mahato	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tusar Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rimpa saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAYANTAN HOWLADER	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saheli Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ITI SARDAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biva Paswan	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pampa mallick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mamoni haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jayanti Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tanmoy kandar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Surjodeep Howlader	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debabrata ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Surajit Majhi	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arpitha Ray	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Chumki Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jayanta Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abir Kumar Sarkhel	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biswajit banik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ratna Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Champa Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shilpa Gharami	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PRIYANKA BANIK	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayan santra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sunanda Mistry	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Puspak Acharjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Manisha Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jahir hossen laskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SAHIL ROY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Laboni barik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jeet chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suvradip podder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudipta Baidya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aparna Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohini ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Somnath halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhayshankar Jha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Amit Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanket Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shovik bhattacharya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Trina Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Akash pal Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arpita Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jaya singh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rakhi Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saptadeep sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudipa khamrui	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Diya Bhowmick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Partha dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soubhik Ghughu	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rina kamat	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Moonmoon Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pinki halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudipta Mallick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suman Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Koyel sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipanjan Datta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipika mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Retu Paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rakhi Pramanik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Eshani Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Manideep Boral	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riya Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Partha Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bina Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhankar halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aanchal kamat	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka Naiya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Avishek jana	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bishakha Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mousumi karmakar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanghamita das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyangshu sil	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohit sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arijit Barman	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nisha Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Goutam naiya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Piya sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saheb Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sadhana Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subham Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sumon Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kamal sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debdatta Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sumi Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suraj Shek	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jyotirmoy mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bishal Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Hena Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Krishna Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Swati halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhajit Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ashim Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deep Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rahul samanta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tarak mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Megha Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayanti Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhajit Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ayan dip mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Atanu Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sathi halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pradip Mazumdar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayan Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Susmita debnath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumyajit mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bithi Basak	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Supriya Majhi	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sumana Shaw	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tamali Mistri	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sujata sarder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Payel Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sukanya Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Monojit Dutta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
RAHUL KUMAR DAS	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subarna Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riddhi Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Argha manna	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohit dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tanu dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bhaskar Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priti Mishra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Prosanjit Paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nayantara Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Moumita Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mandira Karmakar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priya das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Souvik podder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sujan Pramanik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Koyel Adhikary	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shibu mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Madhumita Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ATRAYEE MONDAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ruksha Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhirup Majumder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rachana Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ishita Mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Atanu Safui	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
BISHU MONDAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Moslamun Sultana Ahmed	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aakash Roy Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sathi pramanik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subrata kayal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Raj Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Parbati Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Puspita Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jhuma Karmakar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sarmila Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Roni sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anandita Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deep Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Reya mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kabita Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rikta Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rishu Kumar jha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Himanshu Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sabuj Dey	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deep Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Puspa sutradhar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Akash Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Rohit makal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Baisakhi mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SANJIT CHHATUI	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rakhi Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tiyasha Paik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka mridha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Koushmita Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sumi Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sania Farhat	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhadra halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ritam Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priya hazra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dinesh prasad	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riya Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shreyana Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riya Debnath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Amit Debnath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohit Mistri	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Harshada Munge	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sukla sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ishita Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Piu mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bidesh paramanik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bappa das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tina gayen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ratna das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumyajit Paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sushmita Jatua	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Piyali Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sounak Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ANIK SAHA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Raja Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
BITTU MANDAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sonali khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Radha mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Himadhri Mridha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudipta Rana	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shreyasi Nath	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
MD KHURSHID ALAM LASKAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ria Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Monalisha Gharami	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shatarupa mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anisa Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sipra Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Arif Hossain Safui	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Akash Bhagat	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nisha Rani Maity	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mamoni Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Labonya Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Rajyasri Mukherjee

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Ankur Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
MUNMUN PATRA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sutapa majumdar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayantani das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sanchita barman	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ankan Majhi	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
DIPTANIL ADHIKARY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sahil Altamas Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sudipa Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Apurba Raptan	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Atanu Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Avijit mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suvhojit mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tanushree Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sandipan Deb	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sujit chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sadhana Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Supratim Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Poli das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
RIYA MODAK	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tuhina Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suchismita Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rajdeep saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Supriya halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sunita biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aumitendu Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Jarina khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shashwata Chandra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Surajit Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pappu mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sourav Majhi	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rupali khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debjit mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhojit Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bipasha Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suparna pramanik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
RIKTAM ROY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Minati Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riya Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sharhad Ahmed	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tandra Ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mithu Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sandip mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sunita Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhojit Naiya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Deepshikha Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Atanu mahaldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rabi pramanik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sayanti Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Raj kumar Bhandari	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Sk Priya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nikita Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhosri Sengupta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
susmita Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Roni Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sangita Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhishek saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Santanu Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shraboni bose	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mazharul Gazi	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priyanka Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SUMAN GANGULY	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nasifa Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subho Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Indrajit Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sharnali Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nasrin khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suman mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sohani Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Zannate nur	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subrata Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kishor Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Supriyo manna	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biswanath Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ANUSREE NASKAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
MERAJUL SK	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Prativa Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sagarika halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Avranil jana	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Saraswati mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sandipan Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priti sharma	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Raja sahani	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SOUMEN BAIDYA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Uma Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tanushree chatterjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shreya Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kartick Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Chandana Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ekata Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Amit Santra	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Atudeep das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tanima deb	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Moumita sanpui	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Koyel sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nitasha vincent	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mousumi halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rohini Singh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Isha Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
JAYANTA HALDER	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Chayan Banerjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Priya sinha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PINKI NASKAR	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rita karmakar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sovanlal mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Palash Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ABANI BERA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SURAJIT dhara	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhirup Gupta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debu Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sonali Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
RUKSHA KHATUN	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Piu kirtania	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Trishna mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rani Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shrestha Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PURNIMA CHHATUI	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Puja purkait	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sangita roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Akash Mandal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Antara Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sasmit chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sankhayan Pramanik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tithi Naiya	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Nandini Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhijit Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riya Ojha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Puja mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Soumitra Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bikram pailan	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Srabani Gayen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Hriday Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sweta Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipa Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
kalpana sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anirban sahu	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Joyee sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pinki sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anirban Mallick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abhinaba Chakraborty	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Liza Parvin	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Munmun halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pritheraj sahoo	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mousumi Sarkar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Ankita Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Gourab Banik	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Shreya paul	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Abir Sen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bidisha ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Mahan mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	

Vijaygarh Jyotish Ray College

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Mousumi Banerjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhendu Haldar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bishakha Naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tuktuki Sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Monisha kanji	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aparna mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Dipti das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ARDHENDU KANJI	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Kakali Das	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pooja mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rahul banerjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Rachaita naskar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pijush gayen	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Bandana Halder	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sumitra mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ARGHA MONDAL	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Krishna sardar	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subrata Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suman kumari shaw	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Puja singh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sona Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Santu Dinda	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Suparna Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tanushree sanfui	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Budhaditya Chowdhury	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sushmita Roy	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
PAYEL PARI	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Renuka shaw	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Biki mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Joyita Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Maitree ghosh	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Anupam Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Riya Mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sagarika panda	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Samrat Bhowmick	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
SUDIPTO BOSE	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Sujata mondal	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Subhajit Saha	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Debarko Mukherjee	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tanusree Mistri	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Tama Biswas	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Aneet Dutta	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Minara khatun	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pranay Bose	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
Pratim bose	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
APARNA MRIDHA	Environmental Studies(UG)	AECC-2	Project Work/ Field Work	AECC-2	
ABITA DAS	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
ADRITA SINHA	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
AMLAN DAS	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
ANAMIKA MONDAL	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

ANANNYA HALDER	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
ANANYA SARKAR	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
ANKITA PAUL	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
ANUSHA CHAKRABORTY	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
ARNOBI DAS	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
ATMAJA GHOSH	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
BHAKTARAM NAIYA	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
CHANDRANI DEY	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
KEYA BISWAS	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
LATA GAYEN	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
MADHUPARNA DEY	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
NILANJAN KARANJAI	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
NIPA BANIK	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
PRACHURJYA GHOSH	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
RISIKA DEBNATH	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
SAYANTIKA SIL	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
SK WASIM AQIB	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
SOUTIK ADHIKARY	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
SWARUPA BANERJEE	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
TAIYABUNNISHA LASKAR	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
TUHIN PRAMANIK	BSc Zoology	ZOOA	Ecology Lab -Practical(Field Work)	ZOOA-CC5-11-P	
Avijit Munda	BSc General (Bio)	BOTG	Economic Botany - Practical (Field Work)	DSE-B-6-3-P	
Ankita Roy	BSc General (Bio)	BOTG	Economic Botany - Practical (Field Work)	DSE-B-6-3-P	
Ishita Sardar	BSc General (Bio)	BOTG	Economic Botany - Practical (Field Work)	DSE-B-6-3-P	
Samaresh Kayal	BSc General (Bio)	BOTG	Economic Botany - Practical (Field Work)	DSE-B-6-3-P	
Shibasish Karmakar	BSc General (Bio)	BOTG	Economic Botany - Practical (Field Work)	DSE-B-6-3-P	
Suvankar Sur	BSc General (Bio)	BOTG	Economic Botany - Practical (Field Work)	DSE-B-6-3-P	
Ankita Sinha	BSc General (Bio)	BOTG	Economic Botany - Practical (Field Work)	DSE-B-6-3-P	
Anirita Chatterjee	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Anwesha Barui	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Krishna Ghosh	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Maheque Khan	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Moumita Chakraborty	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Rina Jele	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Sharmistha Dash	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Aakash Debnath	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Kumarjit Podder	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Santanu Sarkar	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Subhabrata Jana	BSc Botany	BOTA	Economic Botany - Practical (Field Work), Plant Geography, Ecology & Evolution-Practical (Field Work)	BOT-A-CC-4-9-P, BOT-A-CC-4-8-P	
Susmita Roy	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Soumontika Ghosh	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Maheswari Saha	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Ankita Majumder	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Joyeeta Adhikary	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Tania Singh	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Shalini Saha	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Shaonee Sarkar	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Rohit Kumar Dutta	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Samim Molla	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Sagar Gayen	BSC Botany	BOTA	Natural Resource Management -Practical(Field Survey), Project Work	BOT-A-DSE-B-6-8-P, DSE-B1	
Somjit Khanra	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Sreejani Basu	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Swastika Banerjee	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Anisha Paul	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Diya Aich	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Sankalita Paul	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Debarati Jana	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Reya Mukherjee	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Sohini Guha	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Suhrita Paul	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Arpita Kabasi	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
AHANA MANDAL	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Puspita Roy	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Shrabonti Pramanik	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Arshama Ziya Haque	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Sharifah Khatun	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Tisha Sarkar	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Sohini Aich	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Mohit Kumar Choubey	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Anirban Chakraborty	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Anish Ghosh	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Rahul Sekh	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Subhankar Maity	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Biswarup Biswas	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Rajdip Saha	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Ayantanu Mondal	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Arpan Baidya	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Moinak Dwarik	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Arijeet Malo	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Usnik Debnath	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Sayan Datta	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Ankurendu Chakraborty	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Tunir Bid	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
Suryadip Banerjee	BSc Microbiology	MCBA	Environmental Microbiology-Practical (Field Work)	MCB-A-CC-9-4-P	
ABHIK GUHA	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
ANANNYABROTO DE	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
ANIMESH HALDER	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
ANINDITA PAUL	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
ANKITA ADAK	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
ANKITA ROY	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
ANUMITA KARMAKAR	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
BIMAN DAS	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
DEBAYAN SAHA	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
DIPANWITA PORIA	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
KEKA BHATTACHARJEE	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	

Vijaygarh Jyotish Ray College

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

NAIREETA SAMAJDAR	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
NISHA ROY	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
PALASH PAUL	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
PIYALI NASKAR	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
PRAGYETA GHOSH	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
PRASUN PAUL	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
PRITAM BANERJEE	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
PRITAM KUMAR PRASAD	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
RAJ FARHAD	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
RANU PAL	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
RICHA LATU	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
RIYA CHAKRABORTY	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SAGNIK SADHUKHAN	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SANCHAREE SENSARMA	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SANCHARIKA SARKAR	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SANTANU SARDAR	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SHIVANGI SARUP	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SOURAV PAN	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SOUVIK SASMAL	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SREYA DEBNATH	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SUBARNA ROY	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SUBHRA SHANKAR BHATTACHARJEE	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SUDIPTO PAUL	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SUPRITI MUKHERJEE	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
SUSHMITA BISWAS	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
TIYASHA DEY	MSc Microbiology	MICR	Summer Project & Seminar (Internship)	SEMESTER-3	
Sohini Majumder	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Srinjoyee Das	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Souvik Dey	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Sayandeep Thakurata	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Suman Bera	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Supriya Naskar	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Rohit Debnath	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Arka Bhattacharya	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Bidisha Bhattacharya	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Shwetadri Bhandari	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Pulak Kumar Sarkar	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Triyasha Giri	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Anushri Mondal	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Akash Majhi	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Tuhina Chakraborty	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Sreeparna Roy	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Jayati Chakraborty	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Kaustav Bhowmick	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Namrata Halder	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Subhangi Dey	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Rahul Banerjee	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Arijit Naskar	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Nilanjan Saha	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Simlin Das	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Souvik Poddar	BA Journalism	JORA	Dissertation Project	DSE-B-5-2	
Abhilasha Bhattacharya	BSc Economics	ECOA			Field Work
Anindita Ghosh	BSc Economics	ECOA			Field Work
Arup Dey	BSc Economics	ECOA			Field Work
Debasish Roy	BSc Economics	ECOA			Field Work
Pragata Das	BSc Economics	ECOA			Field Work
Kushal Sarkar	BSc Economics	ECOA			Field Work
Soumik Mitra	BSc Economics	ECOA			Field Work
Druhin Ghosh	BSc Economics	ECOA			Field Work
Syed Arman Ali	BSc Economics	ECOA			Field Work
Sneha Majumder	BSc Economics	ECOA			Field Work
Shankharaj Gantait	BA Education	EDCA			Field Work
Supriyo Naskar	BA Education	EDCA			Field Work
Sanjana das	BA Education	EDCA			Field Work
Monojit Halder	BA Education	EDCA			Field Work
Sagar Paul	BA Education	EDCA			Field Work
Subhendu Mondal	BA Education	EDCA			Field Work
Raja Das	BA Education	EDCA			Field Work
Shanu Halder	BA Education	EDCA			Field Work
Asha Pal	BA Education	EDCA			Field Work
Suravi Naskar	BA Education	EDCA			Field Work
Swati Bhattacharya	BA Education	EDCA			Field Work
Puja Sanfui	BA Education	EDCA			Field Work
Ayan Mondal	BA Education	EDCA			Field Work
Swastika Mondal	BA Education	EDCA			Field Work
Saktinath Sardar	BA Education	EDCA			Field Work
Akshay Mondal	BA Education	EDCA			Field Work
Rishita Das	BA Education	EDCA			Field Work
Mita Bain	BA Education	EDCA			Field Work
Esita Maity	BA Education	EDCA			Field Work
Biswanath Mondal	BA Education	EDCA			Field Work
Anamika Paul	BA Education	EDCA			Field Work
Bibek Chandra Singha	BA Education	EDCA			Field Work
Babai Halder	BA Education	EDCA			Field Work
Sukalyan Mondal	BA Education	EDCA			Field Work
Rahul Jana	BA Education	EDCA			Field Work
Jit Kundu	BA Education	EDCA			Field Work
Pinki Sinha	BA Education	EDCA			Field Work
Aparna Mondal	BA Education	EDCA			Field Work
Riti Mondal	BA Education	EDCA			Field Work
Rinki Gayen	BA Education	EDCA			Field Work
Shrabani Mondal	BA Education	EDCA			Field Work
Nikita Mondal	BA Education	EDCA			Field Work
Jaya Singh	BA Education	EDCA			Field Work
Hrithik Bhattacharjee	BA Education	EDCA			Field Work
Aumitendu Saha	BA Education	EDCA			Field Work
Ayanika Chowdhury	BA Education	EDCA			Field Work
Bidisha Mondal	BA Education	EDCA			Field Work
Dipti Das	BA Education	EDCA			Field Work

Rajyasri Mitra

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Eshani Dey	BA Education	EDCA			Field Work
Kakali Das	BA Education	EDCA			Field Work
Kiran Halder	BA Education	EDCA			Field Work
Koushmita Das	BA Education	EDCA			Field Work
Moonmoon Mondal	BA Education	EDCA			Field Work
Rituparna Pal	BA Education	EDCA			Field Work
Riya Naskar	BA Education	EDCA			Field Work
Rohini Ghosh	BA Education	EDCA			Field Work
Rohit Makal	BA Education	EDCA			Field Work
Sadhana Mondal	BA Education	EDCA			Field Work
Sanchita Barman	BA Education	EDCA			Field Work
Subrata Mondal	BA Education	EDCA			Field Work
Sudipta Mallick	BA Education	EDCA			Field Work
Sudipta Panda	BA Education	EDCA			Field Work
Sukla Sardar	BA Education	EDCA			Field Work
Tamali Mistri	BA Education	EDCA			Field Work
Tapu Ghosh	BA Education	EDCA			Field Work
Joyasree Mondal	BA Education	EDCA			Field Work
Joydev Patra	BA Education	EDCA			Field Work
Jui Nath	BA Education	EDCA			Field Work
Payel Sarkar	BA Education	EDCA			Field Work
Soma Sardar	BA Education	EDCA			Field Work
Abhijit Sardar	BA Education	EDCA			Field Work
Akash Mandal	BA Education	EDCA			Field Work
Sayandip Halder	BA Education	EDCA			Field Work
Sayanti Mondal	BA Education	EDCA			Field Work
Sharmistha Halder	BA Education	EDCA			Field Work
Sharnali Saha	BA Education	EDCA			Field Work
Somnath Halder	BA Education	EDCA			Field Work
Sona Mondal	BA Education	EDCA			Field Work
Sonali Halder	BA Education	EDCA			Field Work
Sourav Majhi	BA Education	EDCA			Field Work
Sovanlal Mondal	BA Education	EDCA			Field Work
Sushmita Acharya	BA Education	EDCA			Field Work
Sushmita Jatua	BA Education	EDCA			Field Work
Sushmita Roy	BA Education	EDCA			Field Work
Arnab Sardar	BA Education	EDCA			Field Work
Mongal Halder	BA Education	EDCA			Field Work
Moumita Das	BA Education	EDCA			Field Work
Nabanita Naskar	BA Education	EDCA			Field Work
Paromita Acharjee	BA Education	EDCA			Field Work
Sanjay Kumar Giri	BA Education	EDCA			Field Work
Satyarup Mondal	BA Education	EDCA			Field Work
Sayani Roy	BA Education	EDCA			Field Work
Sonali Shaw	BA Education	EDCA			Field Work
Sreya Nath	BA Education	EDCA			Field Work
Suraj Sardar	BA Education	EDCA			Field Work
Susmita Ghosh	BA Education	EDCA			Field Work
Goutam Debnath	BA Education	EDCA			Field Work
Indadulla Molla	BA Education	EDCA			Field Work

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Jaydeep Mondal	BA Education	EDCA			Field Work
Kamal Biswas	BA Education	EDCA			Field Work
Rupshi Biswas	BA Education	EDCA			Field Work
Swathi Bhattacharya	BA Education	EDCA			Field Work
Uma Mondal	BA Education	EDCA			Field Work
Sourav Datta	BA Political Science	PLSA			Field Work
Sneha Saha	BA Political Science	PLSA			Field Work
Bristi Halder	BA Political Science	PLSA			Field Work
Tanusree Mistri	BA Political Science	PLSA			Field Work
Sk. Samima	BA Political Science	PLSA			Field Work
Mriganko Chakraborty	BA Political Science	PLSA			Field Work
Madhumita Jana	BA Political Science	PLSA			Field Work
Sonali Das	BA Political Science	PLSA			Field Work
Ankita Dey	BA Political Science	PLSA			Field Work
Priya Mondal	BA Political Science	PLSA			Field Work
Joy Naskar	BA Political Science	PLSA			Field Work
Riya Naskar	BA Political Science	PLSA			Field Work
Barsha Mondal	BA Political Science	PLSA			Field Work
Mitali Mondal	BA Political Science	PLSA			Field Work
Dip Mondal	BA Political Science	PLSA			Field Work
Gouri Sardar	BA Political Science	PLSA			Field Work
Santanu Roy	BA Political Science	PLSA			Field Work
Atashree Mondal	BA Political Science	PLSA			Field Work
Moli Mondal	BA Political Science	PLSA			Field Work
Kabita Halder	BA Political Science	PLSA			Field Work
Roni Roy	BA Political Science	PLSA			Field Work
Piu Halder	BA Political Science	PLSA			Field Work
Piyali Mondal	BA Political Science	PLSA			Field Work
Puspita Das	BA Political Science	PLSA			Field Work
Himadhri Mridha	BA Political Science	PLSA			Field Work
Papiya Ghosh	BA Political Science	PLSA			Field Work
Maya rani Naskar	BA Political Science	PLSA			Field Work
Shouvik Naskar	BA Political Science	PLSA			Field Work
Rajat Singh	BA Political Science	PLSA			Field Work
Tridha Ghosh	BA Political Science	PLSA			Field Work
Lipika Sardar	BSc Chemistry	CEMA			Field Work
Puja Das	BSc Chemistry	CEMA			Field Work
Sayantani Chakraborty	BSc Chemistry	CEMA			Field Work
Swarnendu Das	BSc Chemistry	CEMA			Field Work
Sritama Paul	BSc Chemistry	CEMA			Field Work
Mintu Halder	BSc Chemistry	CEMA			Field Work
Jayanta Mandal	BSc Chemistry	CEMA			Field Work
Amiya Sasmal	BSc Chemistry	CEMA			Field Work
Debayan Ghosh	BSc Chemistry	CEMA			Field Work
Tanusree paul	BSc Chemistry	CEMA			Field Work
Arghya Chakraborty	BSc Physics	PHSA			Field Work
Aniruddha Bhattacharya	BSc Physics	PHSA			Field Work
Pratik kar	BSc Physics	PHSA			Field Work
Samarjit nath	BSc Physics	PHSA			Field Work
Sudrishiywa Ghosh	BSc Physics	PHSA			Field Work

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Jasmine Gayen	BSc Physics	PHSA			Field Work
Gargi Nandi	BSc Physics	PHSA			Field Work
Sk Salman	BSc Physics	PHSA			Field Work
Abhijit Mondal	BSc Physics	PHSA			Field Work
Ankita Roy	BSc General (Bio)	BSc(Gen)			Field Work
Shrestha Mondal	BSc General (Bio)	BSc(Gen)			Field Work
Samaresh Koyal	BSc General (Bio)	BSc(Gen)			Field Work
Shibashis Karmakar	BSc General (Bio)	BSc(Gen)			Field Work
Srijita Aich	BSc General (Bio)	BSc(Gen)			Field Work
Ankita Sinha	BSc General (Bio)	BSc(Gen)			Field Work
Prasad Joddar	BSc General (Bio)	BSc(Gen)			Field Work
Pranay Sardar	BSc General (Pure)	BSc(Gen)			Field Work
TANMOYEE PRADHAN	BSc General (Pure)	BSc(Gen)			Field Work
DEBARGHYA SAHA	BA Journalism	JORA			Field Work
SOUMYA KARMKAR	BA Journalism	JORA			Field Work
PRASANTA DAS	BA Journalism	JORA			Field Work
SOUMYA KARMAKAR	BA Journalism	JORA			Field Work
RUDRANEEL DUTTA	BA Journalism	JORA			Field Work
PAYEL ROY	BA Journalism	JORA			Field Work
ARPITA BASU	BA Journalism	JORA			Field Work
SISRIKSHU DAS DUTTA	BA Journalism	JORA			Field Work
ROHIT DAS	BA Journalism	JORA			Field Work
SAPTARSHI DAS	BA Journalism	JORA			Field Work
RANJANA KUNDU	BA Journalism	JORA			Field Work
DEBJOTI DAS	BA Journalism	JORA			Field Work
GOURAB KUNDU	BA Journalism	JORA			Field Work
SOUMIKA BHATTACHARYA	BA Journalism	JORA			Field Work
ASTHA KUMARI	BA Journalism	JORA			Field Work
SUNIDHI LAKHANDRI	BA Journalism	JORA			Field Work
AANKHI BANERJEE	BA Journalism	JORA			Field Work
NIKITA DEY	BA Journalism	JORA			Field Work
BARNITA THAKUR	BA Journalism	JORA			Field Work
MONJIMA GHOSH	BA Journalism	JORA			Field Work
RESHMI BHAKTA	BA Journalism	JORA			Field Work
SWARNALYE PAUL	BA Journalism	JORA			Field Work
RAJRUPA DAS	BA Journalism	JORA			Field Work
SAMARPITA BANERJEE	BA Journalism	JORA			Field Work
KAZI SARFARAZ-UR RAHMAN	BA Journalism	JORA			Field Work
RUPLEKHA DEBNATH	BA Journalism	JORA			Field Work
JAYEETA GHOSH	BA Journalism	JORA			Field Work
MOUMITA DAS	BA Journalism	JORA			Field Work
KHUSHI MANSURI	BA Journalism	JORA			Field Work
SHIBANI SARDAR	BA Journalism	JORA			Field Work
AMBIKA BARIK	BA Journalism	JORA			Field Work
SANTANU DAS	BA Journalism	JORA			Field Work
BIPASHA CHOWDHURY	BA Journalism	JORA			Field Work
AYUSHI MITRA	BA Journalism	JORA			Field Work
SANDIPAN BASAK	BA Journalism	JORA			Field Work
RAJDEEP GHOSH	BA Journalism	JORA			Field Work
AISHIKA ROY	BA Journalism	JORA			Field Work

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

ISHIKA CHAKRABORTY	BA Journalism	JORA			Field Work
ARITRO MAJUMDAR	BA Journalism	JORA			Field Work
SAYANTANI CHAKRABORTY	BA Journalism	JORA			Field Work
DEEP KUMAR HALDER	BA Journalism	JORA			Field Work
DEBOPRIYO DAS	BA Journalism	JORA			Field Work
ANISHA KHATOON	BA Journalism	JORA			Field Work
KAUSHIK BANERJEE	BA Journalism	JORA			Field Work
SOUMIK DAS	BA Journalism	JORA			Field Work
ABHISEK ROY	BA Journalism	JORA			Field Work
PAYEL GHOSH	BA Journalism	JORA			Field Work
SUBHAM ROY	BA Journalism	JORA			Field Work
SARTAJ NASRIN	BA Journalism	JORA			Field Work
ARPITA HALDER	BA Journalism	JORA			Field Work
ABHIJEET ANAND	BA Journalism	JORA			Field Work
DRISHTANT GOPE	BA Journalism	JORA			Field Work
SREEJIT BHATTACHARJEE	BA Journalism	JORA			Field Work
NEHA MONDAL	BA Journalism	JORA			Field Work
Aakash Roy Chowdhury	BA Journalism	JORA			Field Work
Anwesh De	BA Journalism	JORA			Field Work
Astitya Roy	BA Journalism	JORA			Field Work
Sambaran Mukherjee	BA Journalism	JORA			Field Work
Sasmit Chakraborty	BA Journalism	JORA			Field Work
Sukanta Sahoo	BA Journalism	JORA			Field Work
Ruksana Khatun	BA Journalism	JORA			Field Work
Sayani Laha	BA Bengali	BNGA			Field Work
Katha Priya Dey	BA Bengali	BNGA			Field Work
Subho Dalui	BA Bengali	BNGA			Field Work
Shovana Shyamal	BA Bengali	BNGA			Field Work
Debabrata Naskar	BA Bengali	BNGA			Field Work
Sandip Singh	BA Bengali	BNGA			Field Work
Rojifa Khatun	BA Bengali	BNGA			Field Work
Piu Saha	BA Bengali	BNGA			Field Work
Debabrata Naskar	BA Bengali	BNGA			Field Work
Somu Sasmal	BA Bengali	BNGA			Field Work
Subha Das	BA Bengali	BNGA			Field Work
Soma Halder	BA Bengali	BNGA			Field Work
Anita Tripathi	BA Bengali	BNGA			Field Work
Subrata Karmakar	BA Bengali	BNGA			Field Work
Sohini Paul	BA Bengali	BNGA			Field Work
Aparna Mridha	BA Bengali	BNGA			Field Work
Aparna Paul	BA Bengali	BNGA			Field Work
Arup Das	BA Bengali	BNGA			Field Work
Arup Sarkar	BA Bengali	BNGA			Field Work
Ashim Halder	BA Bengali	BNGA			Field Work
Deblina Ghosh	BA Bengali	BNGA			Field Work
Debraj Sarkar	BA Bengali	BNGA			Field Work
Deepakshi Bhowmick	BA Bengali	BNGA			Field Work
Dhiman Biswas	BA Bengali	BNGA			Field Work
Dip Samanta	BA Bengali	BNGA			Field Work
Mousumi Gayen	BA Bengali	BNGA			Field Work

Rajyasri Mitra

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Mousumi Sengupta	BA Bengali	BNGA			Field Work
Nirupama Jana	BA Bengali	BNGA			Field Work
Nitu Das	BA Bengali	BNGA			Field Work
Piu Purkait	BA Bengali	BNGA			Field Work
Priya Roy	BA Bengali	BNGA			Field Work
Priyanka Das	BA Bengali	BNGA			Field Work
Provash Naskar	BA Bengali	BNGA			Field Work
Puja Sardar	BA Bengali	BNGA			Field Work
Rajesh Halder	BA Bengali	BNGA			Field Work
Rama Das	BA Bengali	BNGA			Field Work
Rana Mondal	BA Bengali	BNGA			Field Work
Rupanjali Roy	BA Bengali	BNGA			Field Work
Sanatan Sarddar	BA Bengali	BNGA			Field Work
Sarawati Sardar	BA Bengali	BNGA			Field Work
Sayan Mondal	BA Bengali	BNGA			Field Work
Subhodeep Mallick	BA Bengali	BNGA			Field Work
Suman Mallick	BA Bengali	BNGA			Field Work
Sumana Paul	BA Bengali	BNGA			Field Work
Sumi Biswas	BA Bengali	BNGA			Field Work
Suraj Shek	BA Bengali	BNGA			Field Work
Jaba Mistri	BA Bengali	BNGA			Field Work
Jaysree Roy	BA Bengali	BNGA			Field Work
Jhuma Halder	BA Bengali	BNGA			Field Work
Karabi Sardar	BA Bengali	BNGA			Field Work
Prangan Raha Roy	BA Bengali	BNGA			Field Work
Pratima Halder	BA Bengali	BNGA			Field Work
Prerana Mishra	BA Bengali	BNGA			Field Work
Priyanka Halder	BA Bengali	BNGA			Field Work
Wriddha Mandal	BA Bengali	BNGA			Field Work
Ruksana Khatun	BA Bengali	BNGA			Field Work
Neha Dey	BA Bengali	BNGA			Field Work

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Field Work Report

Vijaygarh Jyotish Ray College

Report of Industrial Visit to Diamond Beverages Pvt Ltd., Coca-Cola India, Taratala, Kolkata- 700088 organized by Department of Microbiology, Vijaygarh Jyotish Ray College on 14th May, 2022

Industrial as well as educational tours are an excellent way for students and educators to learn, interact, and share ideas. This type of tours gives students and educators a break while also giving both groups the opportunity to learn more about one another. Educational tours foster teamwork and community among the students, which is significant for both of them. The purpose of an educational tour for students is to provide them with a richer educational experience. Industrial tours offer them an opportunity to explore real life experiments and experiences. By exposing students to different aspects of life, industry can better enhance their learning.

Departments of Microbiology, Vijaygarh Jyotish Ray College, Kolkata, had organized an Industrial Visit to Diamond Beverages Pvt Ltd., Coca-Cola India, Taratala, Kolkata- 700088 on 14th May, 2022 for B.SC 4th Semester students. Total 28 students and 5 faculties of the above-mentioned department had participated in this industrial tour. During the tour the participants had explored the different sections of the industry which includes raw material processing unit, downstream processing unit, quality control unit, packaging unit and microbiology laboratory from 10.00 am to 2 pm. Apart from that, experts from different units shared their valuable knowledge with our students in their conference room, which was really praiseworthy. All the faculties and participants got very much enriched from this visit. Overall, they have spent a thought-provoking meaningful day and showed interest to participate in more field trips in future. All the students got participation certificate.

Rajyasri Mukherjee
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Gmail Sudip Samadder <sudip86samadder@gmail.com>

Fwd: Industrial Visit - Vijaygarh Jyotish Ray College (Microbiology dept.)

1 message

sampa debnath <sampamicrobio@gmail.com> Tue, Feb 7, 2023 at 2:53 PM
To: sudip08samadder@gmail.com, Sudip Samadder <sudip86samadder@gmail.com>

---------- Forwarded message ---------
From: **Aparajita Mukherjee** <aparajita@diamondbev.in>
Date: Thu, 5 May 2022, 10:28
Subject: Industrial Visit - Vijaygarh Jyotish Ray College (Microbiology dept.)
To: sampa debnath <sampamicrobio@gmail.com>
Cc: Indranil Dutta <helpline@diamondbev.in>, Nirmalya Bhattacharya <nirmalya@diamondbev.in>, Ms Semanti Ghosh <semanti@diamondbev.in>

Dear Madam,

Greetings from Diamond Beverages Pvt Ltd.!!

We confirm the industrial visit date on 14th May 2022, Saturday. All other protocols remain the same.

Regards,
Aparajita Mukherjee

From: sampa debnath <sampamicrobio@gmail.com>
Sent: Thursday, May 5, 2022 6:46 AM
To: Aparajita Mukherjee <aparajita@diamondbev.in>
Subject: About the program in coming week

To
Aparajita Mukherjee,
Hr head, diamond beverage pvt Ltd taratala,

Dear Madam,
It will be highly appreciable for us, if you kindly inform us the date and time of program within this week, then we can plan accordingly for our students.
Thanking you with regards,
Sampa Debnath

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Name of the Institute: Vijaygarh Jyotish Ray College

Address of the Institute: 8/2 Bejoygarh, Jadavpur, Kolkata-700032

Sl.	Name of Visitors	Qualification	Contact No.	Expectation	Signature
1	Dr. Sampa Debnath	Teacher	9433170705	Lab visit for academic purposes	Sampa Debnath
2	Dr. Saswati Gayen	Teacher	9831720803	Lab visit for academic purposes	Saswati Gayen
3	Dr. Prasenjit Das	Teacher	9433285855	Lab visit for academic purposes	Prasenjit Das
4	Dr. Shilajit Barua	Teacher	8240168290	Lab visit for academic purposes	
5	Miss Sahana Ghosh	Teacher	8017033099	Lab visit for academic purposes	Sahana Ghosh.
6	Arpan Baidya	Student (BSc 4th Sem)	6289624235	Lab visit for academic purposes	Arpan Baidya
7	Mohit Kumar Choubey	Student (BSc 4th Sem)	7439616955	Lab visit for academic purposes	Mohit. Kr. Choubey
8	Reya Mukherjee	Student (BSc 4th Sem)	8584962534	Lab visit for academic purposes	Reya Mukherjee.
9	Anish Ghosh	Student (BSc 4th Sem)	7439171163	Lab visit for academic purposes	Anish Ghosh
10	Sohini Aich	Student (BSc 4th Sem)	6289498199	Lab visit for academic purposes	Sohini Aich
11	Debarati Jana	Student (BSc 4th Sem)	8670128182	Lab visit for academic purposes	Debarati Jana
12	Ankurendu Chakraborty	Student (BSc 4th Sem)	8697226896	Lab visit for academic purposes	Ankurendu Chakraborty
13	Subhankar Maity	Student (BSc 4th Sem)	9647095908	Lab visit for academic purposes	Rajdip Saha.
14	Rajdip Saha	Student (BSc 4th Sem)	8584046612	Lab visit for academic purposes	Subhankar Maity.
15	Ayantanu Mondal	Student (BSc 4th Sem)	7478793996	Lab visit for academic purposes	Ayantanu Mondal
16	Anisha Paul	Student (BSc 4th Sem)	7980988090	Lab visit for academic purposes	Anisha Paul
17	Sankalita Paul	Student (BSc 4th Sem)	8777540187	Lab visit for academic purposes	Sankalita Paul
18	Rahul Ganguly	Student (BSc 4th Sem)	9748558772	Lab visit for academic purposes	Rahul Ganguly
19	Diya Aich	Student (BSc 4th Sem)	7595855461	Lab visit for academic purposes	Diya Aich
20	Puspita Roy	Student (BSc 4th Sem)	7595095347	Lab visit for academic purposes	Puspita Roy.
21	Biswarup Biswas	Student (BSc 4th Sem)	9093279885	Lab visit for academic purposes	Biswarup Biswas
22	Swastika Banerjee	Student (BSc 4th Sem)	7044509893	Lab visit for academic purposes	Swastika Banerjee.
23	Suhrita Paul	Student (BSc 4th Sem)	6295692981	Lab visit for academic purposes	Suhrita Paul.
24	Ahana Mandal	Student (BSc 4th Sem)	8777826274	Lab visit for academic purposes	Ahana Mandal
25	Anirban Chakraborty	Student (BSc 4th Sem)	6290333752	Lab visit for academic purposes	Anirban Chakraborty

DR. PRASENJIT DAS
HEAD
DEPARTMENT OF MICROBIOLOGY
VIJAYGARH JYOTISH RAY COLLEGE
KOLKATA - 700032

DR. PRASE... DAS
EPARTME...
VIJAYGA...
...OLOGY
...OLLEGE

Prasenjit Das

Vijaygarh Jyotish Ray College

26	Arpita Kabasi	Student (BSc 4th Sem)	8777380027	Lab visit for academic purposes	Arpita Kabasi
27	Usnik Debnath	Student (BSc 4th Sem)	9007128515	Lab visit for academic purposes	Usnik Debnath
28	Sreejani Basu	Student (BSc 4th Sem)	9330125056	Lab visit for academic purposes	Sreejani Basu.
29	Tunir Bid	Student (BSc 4th Sem)	6290837096	Lab visit for academic purposes	Tunir Bid
30	Shrabonti Pramanik	Student (BSc 4th Sem)	7044546878	Lab visit for academic purposes	Shrabonti Pramanik
31	Sayan Datta	Student (BSc 4th Sem)	6296363602	Lab visit for academic purposes	Sayan Datta
32	Arijeet Malo	Student (BSc 4th Sem)	8335902494	Lab visit for academic purposes	
33	Sohini Guha	Student (BSc 4th Sem)	6289018085	Lab visit for academic purposes	Sohini Guha
~~34~~	~~Sharifah Khatun~~	~~Student (BSc 4th Sem)~~	~~7811852991~~	~~Lab visit for academic purposes~~	
34	Tisha Sarkar	Student (BSc 4th Sem)	8017922975	Lab visit for academic purposes	Tisha Sarkar

Prasenjit Das

DR. PRASENJIT DAS
HEAD
DEPARTMENT OF MICROBIOLOGY
VIJAYGARH JYOTISH RAY COLLEGE
KOLKATA - 700032

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

ONE DAY INDUSTRIAL VISIT

ORGANIZED BY

THE DEPARTMENT OF MICROBIOLOGY, VIJAYGARH JYOTISH RAY COLLEGE

IN COLLABORATION WITH

DIAMOND BEVERAGES PVT. LTD. KOLKATA

Certificate of Participation

This is to certify that

Anish Ghosh

student of 4th semester B.Sc (Microbiology), Vijaygarh Jyotish Ray College had successfully participated in the "Industrial visit for academic purposes" at Diamond Beverages Pvt. Ltd; P-41, Taratala Road, Zinzira Bazar, Kolkata-700 088 on May 14, 2022.

Prasenjit Das		R. Mogy
Head of the Department Dept. of Microbiology, VJRC	HR Head Diamond Beverages Pvt. Ltd.	Principal VJRC

Vijaygarh Jyotish Ray College

ONE DAY INDUSTRIAL VISIT

ORGANIZED BY

THE DEPARTMENT OF MICROBIOLOGY, VIJAYGARH JYOTISH RAY COLLEGE

IN COLLABORATION WITH

DIAMOND BEVERAGES PVT. LTD. KOLKATA

Certificate of Participation

This is to certify that

Sreejani Basu

student of 4th semester B.Sc (Microbiology), Vijaygarh Jyotish Ray College had successfully participated in the "Industrial visit for academic purposes" at Diamond Beverages Pvt. Ltd; P-41, Taratala Road, Zinzira Bazar, Kolkata-700 088 on May 14, 2022.

Head of the Department	HR Head	Principal
Dept. of Microbiology, VJRC	Diamond Beverages Pvt. Ltd.	VJRC

Vijaygarh Jyotish Ray College

ONE DAY INDUSTRIAL VISIT

ORGANIZED BY

THE DEPARTMENT OF MICROBIOLOGY, VIJAYGARH JYOTISH RAY COLLEGE

IN COLLABORATION WITH

DIAMOND BEVERAGES PVT. LTD. KOLKATA

Certificate of Participation

This is to certify that

Arpita Kabasi

student of 4th semester B.Sc (Microbiology), Vijaygarh Jyotish Ray College had successfully participated in the "Industrial visit for academic purposes" at Diamond Beverages Pvt. Ltd; P-41, Taratala Road, Zinzira Bazar, Kolkata-700 088 on May 14, 2022.

Prasenjit Dan		R. Nicogy
Head of the Department Dept. of Microbiology, VJRC	HR Head Diamond Beverages Pvt. Ltd.	Principal VJRC

Vijaygarh Jyotish Ray College

REPORT OF EDUCATIONAL TOUR TO BANABITAN BIODIVERSITY PARK, KOLKATA ORGANIZED BY DEPARTMENT OF ZOOLOGY, IN COLLABORATION WITH NATURE-MATES NATURE CLUB

Educational tours are an excellent way for students and educators to learn, interact, and share ideas. This type of tours gives students and educators a break while also giving both groups the opportunity to learn more about one another. Educational tours foster teamwork and community among the students, which is significant for both of them. The purpose of an educational tour for students is to provide them with a richer educational experience. Educational tours offer them an opportunity to explore different lifestyles, locations and time periods and also to explore nature, learn about natural ecosystem and need for environmental conservation. By exposing students to different aspects of natural ecosystem and various forms of life such practices can better enhance their learning.

Departments of Zoology of Vijaygarh Jyotish Ray College, Kolkata, in collaboration with Nature-Mates Nature Club had organized an Educational Tour to Banabitan Biodiversity Park, Kolkata on 27th May, 2022 for B.SC 4th Semester students. Total 25 students and 4 faculties of the above-mentioned department and 5 representatives from Nature-Mates Nature Club had participated in this educational tour. During the tour the participants had explored the different parts of Banabitan Biodiversity Park, Kolkata, had been introduced to the entire ecosystem along with all its floral and faunal diversity, gained hands-on experience on butterfly maintenance and some other floral and faunal conservation methodologies. Experts from the nature club had personally interacted with all the students enlightening and inspiring students on natural resources and importance of nature conservation and its best practices during the whole day (from 11.00 am to 5 pm).

All the faculties and participants got very much enriched from the tour. Overall they have spent a thought provoking meaningful day and showed interest to participate in more field trips in future. Participation certificates were issued by Nature-Mates Nature Club.

Photos:

Rajyasri Mondal

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Participation List:

VIJAYGARH JYOTISH RAY COLLEGE

LIST OF STUDENTS FOR THE EDUCATIONAL TOUR TO BANABITAN BIODIVERSITY PARK, KOLKATA ON 27TH MAY, 2022

SERIAL NO.	NAME	ROLL NO.	CONTACT NUMBER
1	ABITA DAS	1417	8583966754
2	ADRITA SINHA	897	7044471414
3	AMLAN DAS	1414	8910519537
4	ANAMIKA MONDAL	1426	9875328267
5	ANANNYA HALDER	1254	9748030836
6	ANANYA SARKAR	1169	7595815542
7	ANKITA PAUL	1107	6291594018
8	ANUSHA CHAKRABORTY	1402	7439460282
9	ARNOBI DAS	849	7044737047
10	ATMAJA GHOSH	1049	9140468031
11	BHAKTARAM NAIYA	64	9674904036
12	CHANDRANI DEY	1162	7980483641
13	KEYA BISWAS	764	8967338232
14	LATA GAYEN	840	8535929559
15	MADHUPARNA DEY	1393	7439872907
16	NILANJAN KARANJAI	1267	8240100263
17	NIPA BANIK	483	7044782007
18	PRACHURJYA GHOSH	979	9903270836
19	RISIKA DEBNATH	1096	7439603569
20	SAYANTIKA SIL	265	8017561309
21	SK WASIM AQIB	671	9153384432
22	SOUTIK ADHIKARY	550	8910649248
23	SWARUPA BANERJEE	913	6289657214
24	TAIYABUNNISHA LASKAR	1160	9749599823
25	TUHIN PRAMANIK	634	6290002796

Rajyasri Mukherjee
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

EXCURSION REPORT
BAKKHALI

BAKKHALI

Programme: Long Field Excursion to study the local flora of a different phytogeographical region of India and to study forest cover of a specific area.

Date: 07.04.2022 to 08.04.2022

Locality: Bakkhali and Henry's Island

Purpose of the visit: The said visit was conducted for the following purposes

- To study the phytogeographical region of Bakkhali and Henry's Island
- To know the vegetation of the particular locality.
- To study in detail the habit and habitat of different mangrove plant specimens.
- To study the morphological characters of different plant specimens.
- To study the adaptive features of mangrove plants of the area
- Collection of data on forest cover of the region

Participant's profile: 10 students of 4^{th} semester and 11 students of 6^{th} semester, total 21 students of Botany Honours (CBCS) participated in the visit

Description of the programme:

- This field visit was organised by Department of Botany, Vijaygarh Jyotish Ray College.
- 10 students of 4^{th} semester and 11 students of 6^{th} semester, total 21 students of Botany Honours (CBCS) participated in the visit along with departmental teachers
- They studied different mangrove plants.
- They recorded the field characters of different plant species in their voucher book.
- Photographs of different plants were taken for documentation.
- They collected data on forest cover of the region.
- The field trips help to strengthen their theoretical knowledge and bring classroom to nature.

Rajyasri Roy

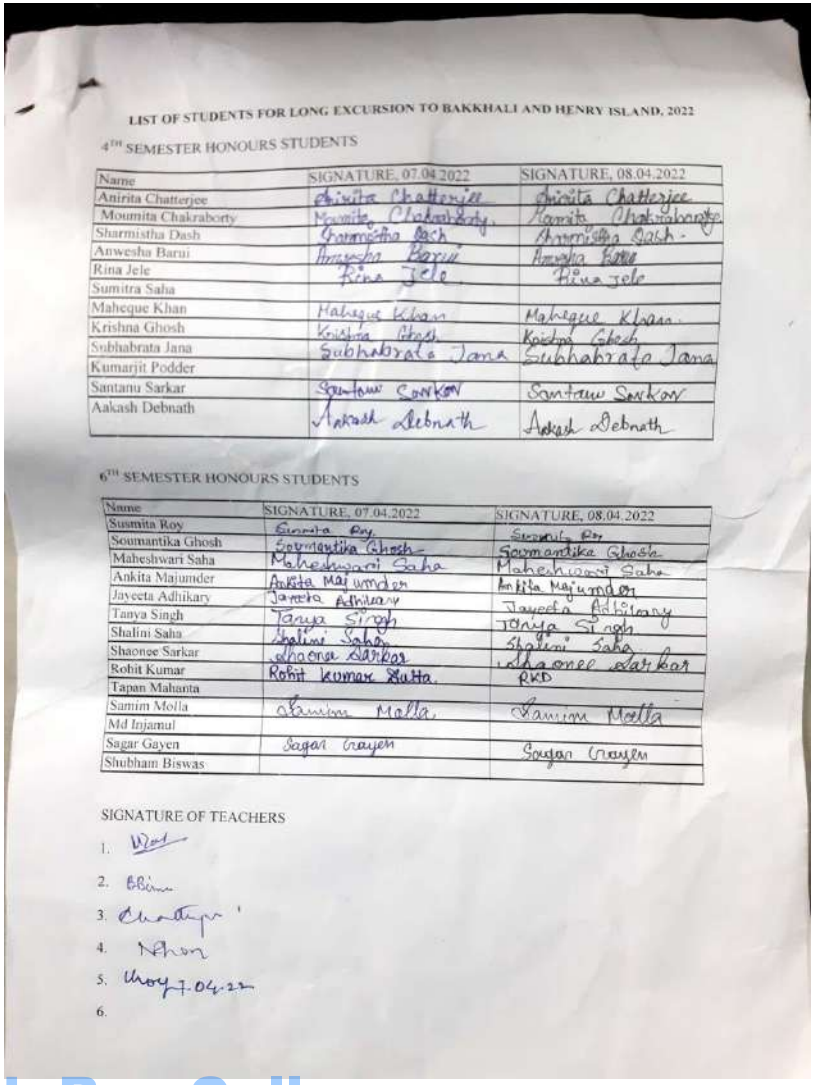
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

PHOTOGRAPHS

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Attendance



LIST OF STUDENTS FOR LONG EXCURSION TO BAKKHALI AND HENRY ISLAND, 2022

4TH SEMESTER HONOURS STUDENTS

Name	SIGNATURE, 07.04.2022	SIGNATURE, 08.04.2022
Anirita Chatterjee	Anirita Chatterjee	Anirita Chatterjee
Moumita Chakraborty	Moumita Chakraborty	Moumita Chakraborty
Sharmistha Dash	Sharmistha Dash	Sharmistha Dash
Anwesha Barui	Anwesha Barui	Anwesha Barui
Rina Jele	Rina Jele	Rina Jele
Sumitra Saha		
Maheque Khan	Maheque Khan	Maheque Khan
Krishna Ghosh	Krishna Ghosh	Krishna Ghosh
Subhabrata Jana	Subhabrata Jana	Subhabrata Jana
Kumarjit Podder		
Santanu Sarkar	Santanu Sarkar	Santanu Sarkar
Aakash Debnath	Aakash Debnath	Aakash Debnath

6TH SEMESTER HONOURS STUDENTS

Name	SIGNATURE, 07.04.2022	SIGNATURE, 08.04.2022
Susmita Roy	Susmita Roy	Susmita Roy
Soumantika Ghosh	Soumantika Ghosh	Soumantika Ghosh
Maheshwari Saha	Maheshwari Saha	Maheshwari Saha
Ankita Majumder	Ankita Majumder	Ankita Majumder
Javeeta Adhikary	Javeeta Adhikary	Javeeta Adhikary
Tanya Singh	Tanya Singh	Tanya Singh
Shalini Saha	Shalini Saha	Shalini Saha
Shaonee Sarkar	Shaonee Sarkar	Shaonee Sarkar
Rohit Kumar	Rohit kumar Sutta	RKD
Tapan Mahanta		
Samim Molla	Samim Molla	Samim Molla
Md Injamul		
Sagar Gayen	Sagar Gayen	Sagar Gayen
Shubham Biswas		

SIGNATURE OF TEACHERS

1.
2.
3.
4.
5. 7.04.22
6.

Rajyasri Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

CERTIFICATES

CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Aakash Debnath

of

Dept. of Botany, Vijaygarh Jyotish Ray College, Kolkata

For participating in the Long Educational Excursion from 7th April to 8th April, 2022 at

Bakkhali and Henry's Island, South 24 Parganas

Organized by

Department of Botany, Vijaygarh Jyotish Ray College, Kolkata

Head
Dept of Botany,
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College, Kolkata

Date: April 11, 2022

CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Jayeeta Adhikary

of

Dept. of Botany, Vijaygarh Jyotish Ray College, Kolkata

For participating in the Long Educational Excursion from 7th April to 8th April, 2022 at

Bakkhali and Henry's Island, South 24 Parganas

Organized by

Department of Botany, Vijaygarh Jyotish Ray College, Kolkata

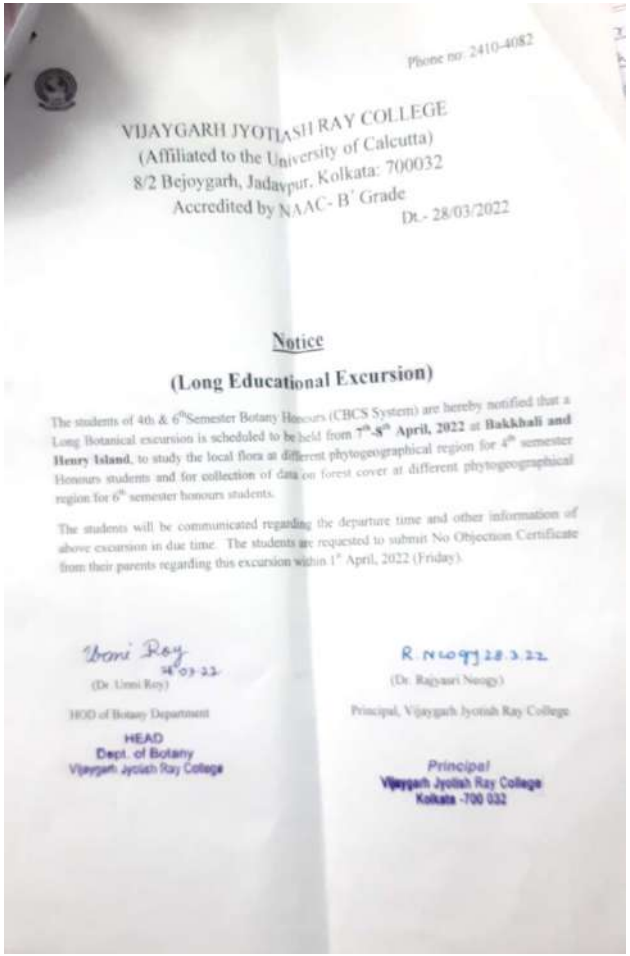
Head
Dept of Botany,
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College, Kolkata

Date: April 11, 2022

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Notice



Phone no: 2410-4082

VIJAYGARH JYOTISH RAY COLLEGE
(Affiliated to the University of Calcutta)
8/2 Bejoygarh, Jadavpur, Kolkata: 700032
Accredited by NAAC- B' Grade
Dt.- 28/03/2022

Notice

(Long Educational Excursion)

The students of 4th & 6th Semester Botany Honours (CBCS System) are hereby notified that a Long Botanical excursion is scheduled to be held from **7th-8th April, 2022** at **Bakkhali and Henry Island**, to study the local flora at different phytogeographical region for 4th semester Honours students and for collection of data on forest cover at different phytogeographical region for 6th semester honours students.

The students will be communicated regarding the departure time and other information of above excursion in due time. The students are requested to submit No Objection Certificate from their parents regarding this excursion within 1st April, 2022 (Friday).

Urmi Roy 28.03.22
(Dr. Urmi Roy)
HOD of Botany Department

HEAD
Dept. of Botany
Vijaygarh Jyotish Ray College

R. Nandy 28.3.22
(Dr. Rajyasri Nandy)
Principal, Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata -700 032

Rajyasri Nandy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

EXCURSI0N REPORT GOLF GREEN

DATE: 22.04.2022

REPORT

Programme: Local Field Excursion to study the medicinal plants in natural habitat.
Date: 22.04.2022
Locality: Golf Green and adjacent areas
Purpose of the visit: The said visit was conducted for the following purposes

- To know the vegetation of the particular locality.
- To study in detail the habit and habitat of different medicinal plant specimens.
- To study the morphological characters of different medicinal plant specimens.

Participant's profile: Total 7 students of 6th Semester Botany General (CBCS) participated in the visit.
Description of the programme:

- This field visit was organised by Department of Botany, Vijaygarh Jyotish Ray College.
- 7students of 6th Semester Botany Honours (CBCS) along with departmental teachers and non teaching staffs participated in this field visit.
- They studied and collected different medicinal plants.
- They recorded the field characters of different plant species in their voucher book.
- Photographs of different plants were taken for documentation.
- The field trip help to strengthen their theoretical knowledge and bring classroom to nature.

Vijaygarh Jyotish Ray College

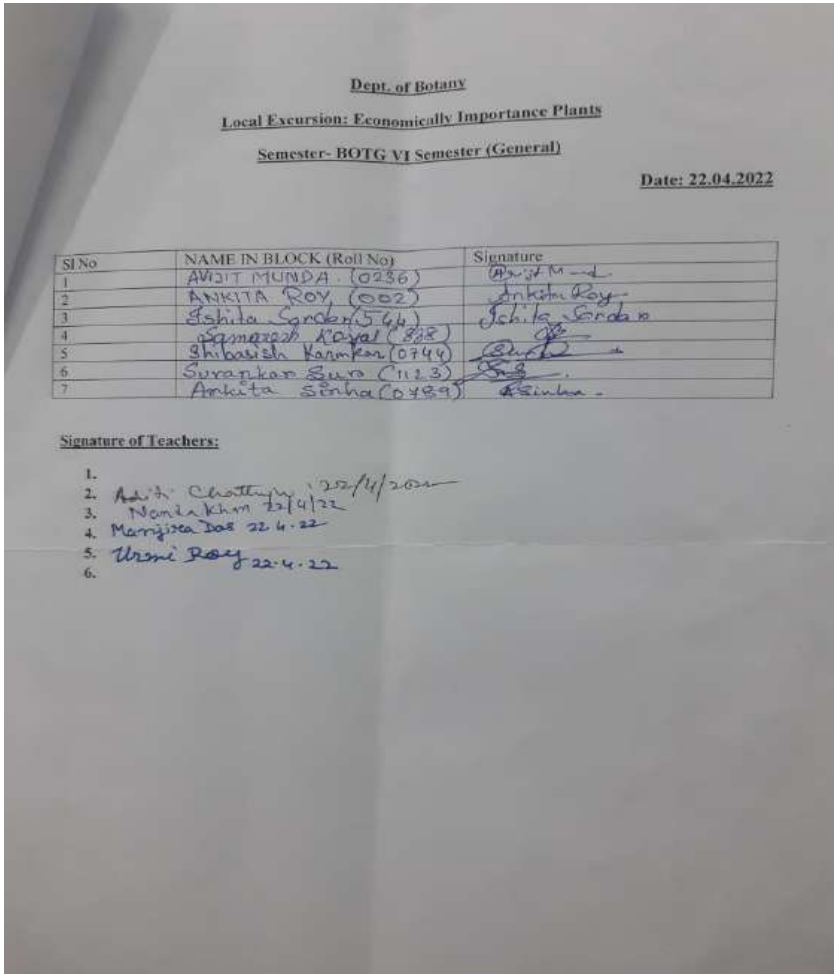
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

PHOTOGRAPH

Rajyasri Mukherjee

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

ATTENDANCE



Dept. of Botany

Local Excursion: Economically Importance Plants

Semester- BOTG VI Semester (General)

Date: 22.04.2022

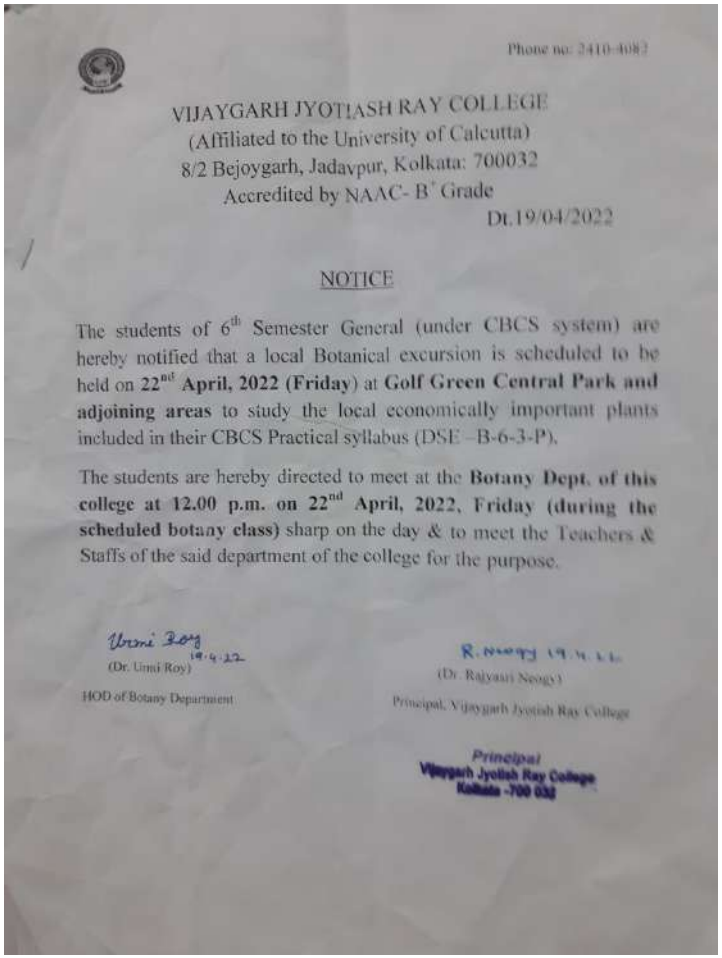
Sl No	NAME IN BLOCK (Roll No)	Signature
1	AVIJIT MUNDA. (0256)	
2	ANKITA ROY. (002)	
3	Ishita Sarkar (544)	
4	Samarjeet Koyal (328)	
5	Shibasish Karmkar (0744)	
6	Surankar Sur (1123)	
7	Ankita Sinha (0489)	

Signature of Teachers:

1.
2. Aditi Chatterjee 22/4/2022
3. Nemia Khan 22/4/22
4. Manjusa Das 22.4.22
5. Urmi Roy 22.4.22
6.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

NOTICE



Phone no: 2410-4082

VIJAYGARH JYOTIASH RAY COLLEGE
(Affiliated to the University of Calcutta)
8/2 Bejoygarh, Jadavpur, Kolkata: 700032
Accredited by NAAC- B^{+} Grade

Dt.19/04/2022

NOTICE

The students of 6th Semester General (under CBCS system) are hereby notified that a local Botanical excursion is scheduled to be held on **22nd April, 2022 (Friday)** at **Golf Green Central Park and adjoining areas** to study the local economically important plants included in their CBCS Practical syllabus (DSE –B-6-3-P).

The students are hereby directed to meet at the **Botany Dept. of this college at 12.00 p.m. on 22nd April, 2022, Friday (during the scheduled botany class)** sharp on the day & to meet the Teachers & Staffs of the said department of the college for the purpose.

Urmi Roy 19.4.22
(Dr. Urmi Roy)
HOD of Botany Department

R. Neogy 19.4.22
(Dr. Rajyasri Neogy)
Principal, Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata -700 032

Vijaygarh Jyotish Ray College

Rajyasri Neogy
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Field Visit to RBI Museum, Kolkata organised by Department of Economics, Vijaygarh Jyotish Ray College, Kolkata

Being an apex institution, RBI plays an important role economic development through monitoring and controlling of the total banking system. It is very important to know how RBI governs and prescribes policy measures for the sake of overall economic development. In this view, we with our economics honour students planned to visit RBI Kolkata office to get an idea about the functioning of RBI. Total 11 students from different semesters and total three teachers from our department visited RBI on 28th May, 2022. From this visit we have enriched ourselves and are able to reduce our knowledge gap in many aspects. Students were really enjoyed with such visit.

List of Faculties

Name	Contact No.
Dr. Abhijit Das	9433449642
Dr. Palashpriya Halder	9903579426
Dr. Isita Mukherjee	8906644832

List of Students

Name	Semester	Contact No.
Abhilasha Bhattacharya	**6th**	**7044585240**
Anindita Ghosh	**6th**	**6289725091**
Debasish Roy	**6th**	**7980169098**
Arup Dey	**6th**	**7980574424**
Kushal Sarkar	**6th**	**8017787910**
Pragata Das	**6th**	**7980847017**
Druhin Ghosh	**4th**	**7044224982**
Soumik Mitra	**4th**	**9073061825**
Syed Arman Ali	**4th**	**9231213120**
Debarko Mukherjee	**2nd**	**6290736083**
Sneha Majumder	**2nd**	**7439529872**

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

One Day Educational tour to Reserve Bank of India Museum, organised by Department of Economics, Vijaygarh Jyotish Ray College, Kolkata held on 28th May, 2022.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

दि आर बी आई म्यूज़ियम
THE RBI MUSEUM

VIJAYGARH JYOTISH RAY COLLEGE

ने आर बी आई म्यूज़ियम का दौरा किया और भारत के मौद्रिक इतिहास और विरासत के बारे में जानकारी पाई।

visited The RBI Museum and learnt about India's monetary history and heritage

दिनांक Date

कोलकाता Kolkata

शुभकामनाओं सहित With best wishes

क्यूरेटर Curator

* दौरा करनेवाले का नाम इस प्रमाणपत्र पर भारतीय रिज़र्व बैंक के मुद्रण प्रेस पर मुद्रित किया गया है । इस प्रेस का उपयोग सरकारी प्रतिभूतियों को मुद्रित करने के लिए किया जाता था।

*The name of the visitor on this certificate has been printed on the printing press of the Reserve Bank of India which was used to print Government securities.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Report of Educational tour to BITM organized by Department of Mathematics, Physiology, Chemistry and Physics

Educational tours are an excellent way for students and educators to learn, interact, and share ideas. This type of tours gives students and educators a break while also giving both groups the opportunity to learn more about one another. Educational tours foster teamwork and community among the students, which is significant for both of them. The purpose of an educational tour for students is to provide them with a richer educational experience. Educational tours offer them an opportunity to explore different lifestyles, locations and time periods. By exposing students to different aspects of life, classrooms can better enhance their learning.

Departments of Mathematics, Physiology, Chemistry and Physics of Vijaygarh Jyotish Ray College, Kolkata, had organized an Educational Tour to Birla Industrial & Technological Museum (BITM)on 19th May, 2022 for B.SC 6th Semester students. Total 28 students and 7 faculties of the above-mentioned departments had participated in this educational tour. During the tour the participants had explored the different science galleries of the museum like Mathematics gallery, electric gallery, television gallery, popular science gallery, biotechnology gallery, coalmine show etc and different interesting science shows like high voltage electricity during the whole day (from 11.00 am to 5 pm). Apart from that, open air science experiments were really praiseworthy. All the faculties and participants got very much enriched from the tour. They participated in a quiz show there and they submitted a field report individually. Overall they have spent a thought provoking meaningful day and showed interest to participate in more field trips in future. All the students got participation certificate.

Photos:

Rajyasri Mondal

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Participation list:

Vijaygarh Jyotish Ray College

List of students for the Educational Tour to BITM on 19.05.2022

Sl No.	Name	Department	Contact Number	NOC	Tour Fee	Signature
1	Tridha Ghosh	Chemistry	8961821138	✓	100	Tridha Ghosh
2	Lipika Sardar	Chemistry	6291917358	✓	100	Lipika Sardar
3	Puja Das	Chemistry	8584965449	✓	100	Puja Das.
4	Sayantani Chakraborty	Chemistry	9330823245	✓	100	Sayantani Chakraborty
5	Suvannendu Das	Chemistry	7890290565	✓	100	Suvannendu Das
6	Sritama Paul	Chemistry	9674817554	✓	100	Suvannendu Das
7	Mintu Halder	Chemistry	7074775987	✓	100	Mintu Halder
8	Jayanta Mandal	Chemistry	9903471501	✓	100	J. Mandal
9	Amiya Sasmal	Chemistry	7047602278	✓	100	A Sasmal
10	Debayan Ghosh	Chemistry	7980148319	✓	100	Dghosh.
11	Prasad Boddar	Pure General	8420828595	✓	100	Pboddar
12	Pranay Sardar	Pure General	6289095430	✓	100	Pranay Sardar
13	Tanusree Paul	B Sc Physics Hons	9038521086	✓	100	Tanusree Paul.
14	Arpaya Chakraborty	Physics	9330531586	✓	100	Arpaya Chakraborty

Vijaygarh Jyotish Ray College

List of students for the Educational Tour to BITM on 19.05.2022

Sl No.	Name	Department	Contact Number	NOC	Tour Fee	Signature
15	Aniruddha Bhattacharya	Physics	9073481575	✓	100	Aniruddha Bhattacharya.
16	Pratik Kar	Physics	6291563640	✓	100	Pratik kar
17	Samarjit Nath	Physics	8420907883	✓	100	Samarjit Nath
18	Sudrishiyan Ghosh	Physics	8017584812	✓	100	Sudrishiyan Ghosh.
19	Jasmine Gayen	Physics	9093520468	✓	100	Jasmine Gayen.
20	Gargi Nandi	Physics	9903312252	✓	100	Gargi Nandi
21	SK Salman	Physics	9883028319	✓	100	SK Salman

Vijaygarh Jyotish Ray College

List of students for the Educational Tour to BITM on 19.05.2022

Sl No.	Name	Department	Contact Number	NOC	Tour Fee	Signature
1	Avijit Munda	Physiology	7439256390	✓	100/-	
2	Ankita Roy	Physiology.	9007342720	✓	100/-	Ankita Roy.
3	Shrestha Mondal	Physiology	9083005286	✓	100/-	Shrestha Mondal
4	Samaresh Rayal	Physiology	8777234776	✓	100/-	
5	for Sibasish Karmakar	physiology	7044613126	✓	100/-	
6	for Srijeeta Aich	physiology	6290773138	✓	100/-	
7	Ankita Sinha	physiology	7890659164	✓	100/-	Ankita Sinha.
8						

Rajyasri Mondal

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Permission letter:

Phone : 2412-4082

VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to The University of Calcutta)
8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032
ACCREDITED BY THE NAAC - B+ Grade.

Ref. No..... Date.....

To

The Director

Birla Industrial and Technological Museum

Kolkata- 700019 Dt.: 17.05.2022

Sub.: Permission for an Educational Tour to BITM on 19.05.2022

Dear Sir/Madam,

We, the Departments of Mathematics, Physiology, Chemistry and Physics of Vijaygarh Jyotish Ray College, Kolkata, have organized an Educational Tour to BITM on 19th May, 2022 for B.SC 6th Semester students. We have planned to explore the museum and different shows from 11:30 am to 4:30 pm (approx.) with 35 students (approx.) of our college.

In these circumstances, if you allow us to execute this educational tour to BITM successfully on above mentioned date so that the students can get the facilities (student concessions and other benefits) to explore the museum and enjoy this educational tour, we shall be highly obliged.

Thanks and regards,

R. Neogy 17.5.22

(Dr. Rajyasri Neogy)

Principal

Vijaygarh Jyotish Ray College

Kolkata- 700032

Principal
Vijaygarh Jyotish Ray College
Kolkata -700 032

Vijaygarh Jyotish Ray College

Notice and NOC letter:

Phone: 033-2412-4082

VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to the University of Calcutta)
8/2, BEJOYGARH, JADAVPUR, KOLKATA-700 032
NAAC Accredited B+

Ref. No..... **Date: 13.05.2022**

Notice

It is notified to the students of B.Sc. 6th Sem that an **Educational Tour** at **Birla Industrial and Technological Museum (BITM),** Kolkata, West Bengal has been arranged by the Departments of Mathematics, Physiology, Chemistry and Physics, Vijaygarh Jyotish Ray College, Kolkata on **19th May, 2022 (Thursday)** to observe International Museum Day. The tour will be started at **10:30 am** sharp from college premises and will be ended by 4:30 pm (approx.) on the above-mentioned date. The vehicle and other conveniences will be arranged by college. The students of B.Sc. 6th SEM of above-mentioned departments are requested to register their names along with the no objection letter duly signed by their parents and a tour charge of Rs. 100/- on 17th May, 2022 at college by 1:00 pm. Students are also requested to carry your college ID card with you on the day of the tour.

Rajyasri Neogy

(Dr. Rajyasri Neogy)
Principal
Vijaygarh Jyotish Ray College

No Objection Letter

Respected Sir/ Madam,

I, Dibakar Ghosh, Parent/ Guardian of Debayan Ghosh do hereby write this to declare that I have no issue if my ward participates in the aforesaid tour. I hereby ensure that my ward will be abiding all rules and regulations. Kindly consider this letter as a no-objection certificate for the same.

Name & Details of the Parent/Guardian

Name: Dibakar Ghosh
Relationship: Father
Signature:
Date: 16/05/2022
Phone No.: 9038771763

Name & Details of the Student

Name: Debayan Ghosh
Address: 'Bijoy Smriti' 127 K.P. Roy Lane Kol-700078
Department: Chemistry
Phone No.: 7980148319

Vijaygarh Jyotish Ray College

Sample Certificate:

ONE DAY EDUCATIONAL TOUR ON EXPERIENCIAL LEARNING

to Bengal Institute of Technology and Management (BITM)

to celebrate

INTERNATIONAL MUSEUM DAY

Organized by

Departments of Mathematics, Physiology, Chemistry & Physics

Vijaygarh Jyotish Ray College

CERTIFICATE OF PARTICIPATION

This is to certify that ..... Ankita Sinha ....., *student of Vijaygarh Jyotish Ray College, has participated in a One Day Educational Tour cum Experiential Learning to Bengal Institute of Technology and Management (BITM), organized by Departments of Mathematics, Physiology, Chemistry & Physics, Vijaygarh Jyotish Ray College, Kolkata held on 19th May, 2022.*

R. Neogy

Dr. Rajyasri Neogy
Principal
Vijaygarh Jyotish Ray College

Prasenjit Das

Dr. Prasenjit Das
IQAC Coordinator
Vijaygarh Jyotish Ray College

Completion Letter:

Rajyasri Neogy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Phone : 2412-4082

VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to The University of Calcutta)
8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032
ACCREDITED BY THE NAAC - B+ Grade.

Ref. No.....

Date. 24/5/2022

To
The Director
Birla Industrial and Technological Museum
Kolkata- 700019

Sub.: Educational Tour to BITM on 19.05.2022

Dear Sir/Madam,

We, Vijaygarh Jyotish Ray College, Kolkata, want to inform you that we have successfully completed the educational tour to BITM, on 19th May, 2022 for B.SC 6th Semester students, organized by the Departments of Mathematics, Physiology, Chemistry and Physics, Vijaygarh Jyotish Ray College. Total 28 students and 7 faculties from above mentioned departments were participated in the educational tour.

During the tour we have explored the different science galleries of the museum like mathematics gallery, electricity gallery, television gallery, popular science gallery, biotechnology gallery, coal mine etc. and different interesting science shows like high voltage electricity, open air science experiments and 3D show from 11:30 am to 4:30 pm (approx.) on the above-mentioned date. All the participants of this tour were enriched not only by the curricular concepts of basic physics, chemistry, mathematics, biology, astronomy, electricity, electronics etc., but also by current topics of interest in science & technology and related social issues designed by BITM.

We are very much thankful to you to give us the opportunity and obliged for your kind cooperation. We hope to visit BITM again with our students.

Visit Certified.

24/5/2022

टि. के. सेनगुप्ता T. K. Sengupta
शिक्षा अधिकारी / Education Officer
बिड़ला औद्योगिक तथा प्रौद्योगिक संग्रहालय
Birla Industrial and Technological Museum
संस्कृति मंत्रालय / Ministry of Culture
भारत सरकार / Govt. of India
कोलकाता / Kolkata

R. Neogy 24.5.22

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Phone : 2412-4082

VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to The University of Calcutta)
8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032
ACCREDITED BY THE NAAC - B+ Grade.

Ref. No.....

Date. 24/5/2022

12. Mr. Pranay Sardar, Pure General,
13. Ms. Tanusree Paul, Physics Honours,
14. Mr. Arghya Chakraborty, Physics Honours,
15. Mr. Aniruddha Bhattacharya, Physics honours,
16. Mr. Pratik Kar, Physics Honours,
17. Mr. Samarjit Nath, Physics Honours,
18. Ms. Sudrishiywa Ghosh, Physics Honours,
19. Ms. Jasmine Gayen, Physics Honours,
20. Ms. Gargi Nandy, Physics Honours,
21. SK Salman, Physics Honours,
22. Mr. Avijit Munda, Bio General,
23. Ms. Ankita Roy, Bio General,
24. Ms. Shrestha Mondal, Bio General,
25. Mr. Samaresh Kayal, Bio General,
26. Sibasish Karmakar, Bio General,
27. Ms. Srijeeta Aich, Bio General,
28. Ms. Ankita Sinha, Bio General.

Thanks and regards,

R. Neogy 24.5.22

(Dr. Rajyasri Neogy)
Principal

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Visit Certified.
26/5/2022
टि. के. सेनगुप्ता T. K. Sengupta
शिक्षा अधिकारी / Education Officer
बिड़ला औद्योगिक तथा प्रौद्योगिक संग्रहालय
Birla Industrial and Technological Museum
संस्कृति मंत्रालय / Ministry of Culture
भारत सरकार / Govt. of India

R. Neogy 24.5.22

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Phone : 2412-4082

VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to The University of Calcutta)
8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032
ACCREDITED BY THE NAAC - B+ Grade.

Ref. No.....

Date. 24/5/2022

The list of the participants (Faculties and students) is given below:

Faculties:

1. Mr. Debasish Chatterjee, Associate Professor, Department of Physics,
2. Dr. Swarnali Sharma, Assistant Professor, Department of Mathematics,
3. Ms. Soma Majumder, Assistant Professor, Department of Physiology,
4. Dr. Sayantani Chatterjee, Assistant Professor, Department of Chemistry,
5. Mr. Surajit Sarkar, Assistant Professor, Department of Physics,
6. Mr. Chiranjit Ghorui, SACT-II, Department of Mathematics,
7. Dr. Anindita Mukherjee, SACT-I, Department of Chemistry,

Students:

1. Ms. Tridha Ghosh, Chemistry Honours
2. Ms. Lipika Sardar, Chemistry Honours,
3. Ms. Puja Das, Chemistry Honours,
4. Ms. Sayantani Chakraborty, Chemistry Honours,
5. Mr. Swarnendu Das, Chemistry Honours,
6. Ms. Sritama Paul, Chemistry Honours,
7. Mr. Mintu Halder, Chemistry Honours,
8. Mr. Jayanta Mandal, Chemistry Honours,
9. Mr. Amiya Sasmal, Chemistry Honours,
10. Mr. Debayan Ghosh, Chemistry Honours,
11. Mr. Prasad Joddar, Pure General,

Visit Certified.
26/5/2022
टि. के. सेनगुप्ता T. K. Sengupta
शिक्षा अधिकारी / Education Officer
बिड़ला औद्योगिक तथा प्रौद्योगिक संग्रहालय
Birla Industrial and Technological Museum
संस्कृति मंत्रालय / Ministry of Culture
भारत सरकार / Govt. of India
कोलकाता / Kolkata

R. Neogy 24.5.22
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

VIJAYGARH JYOTISH RAY COLLEGE
DEPARTMENT OF EDUCATION
&
DEPARTMENT OF BENGALI
REPORT OF EDUCATIONAL TOUR
VENUE: VISWABHARATI UNIVERSITY, SHANTINIKETAN ,BOLPUR
DATE:26.05.2022& 27.05.2022

As we all like to get rid of the monotony of education. The Education and Bengali department always strives for the mental and intellectual development of the students. And for that purpose, students of the departments were taken for an educational trip to Shantiniketan, one of the cradles of Bengali literature, the home of Kabiguru i.e. Visva Bharati. The active participation Principal Madam Dr. Rajyasri Neogy made the trip more pleasant and the department head of the Bengali Dr. Mrinal Birbanshi and Dr. Amalendu Mazumder informed the students about each place. Along with this, Honorable Head of Department of Education, Dr. Amalendu Majumdar, explained to the students the purpose, context and educational system of Santiniketan, and the relationship of this place with Rabindra philosophy. About 93 students from the Education department and 57 students participated in this educational trip. The students were engrossed in this two-day educational trip.

Photos:

Rajyasri Neogy
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Program Name	Program Code	Name of Participant
BA Education	EDCA	Sankharaj Gantait
BA Education	EDCA	Supriyo Naskar
BA Education	EDCA	Sanjana das
BA Education	EDCA	Manojit Halder
BA Education	EDCA	Sagar Paul
BA Education	EDCA	Subhendu Mondal
BA Education	EDCA	Raja Das
BA Education	EDCA	Sanu Halder
BA Education	EDCA	Asha Paul
BA Education	EDCA	Surovi Naskar
BA Education	EDCA	Swati Bhattacharya
BA Education	EDCA	Puja Safui
BA Education	EDCA	Ayan Mondal
BA Education	EDCA	Swastika Mondal
BA Education	EDCA	Saktinath Sardar
BA Education	EDCA	Akshay Mondal
BA Education	EDCA	Rishita Das
BA Education	EDCA	Mita Bain
BA Education	EDCA	Esita Maity
BA Education	EDCA	Biswanath Mondal
BA Education	EDCA	Anamika Paul
BA Education	EDCA	Bibek Chandra Singha
BA Education	EDCA	Babai Halder
BA Education	EDCA	Sukalyan Mondal
BA Education	EDCA	Rahul Jana
BA Education	EDCA	Jit Kundu
BA Education	EDCA	Pinky Sinha
BA Education	EDCA	Aparna Mondal

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

BA Education	EDCA	Riti Mondal
BA Education	EDCA	Rinki Gayen
BA Education	EDCA	Shrabani Mondal
BA Education	EDCA	Nikita Mondal
BA Education	EDCA	Jaya Singh
BA Education	EDCA	Hrithik Bhattacharjee
BA Education	EDCA	Aumitendu Saha
BA Education	EDCA	Ayanika Chowdhury
BA Education	EDCA	Bidisha Mondal
BA Education	EDCA	Dipti Das
BA Education	EDCA	Eshani Dey
BA Education	EDCA	Kakali Das
BA Education	EDCA	Kiran Halder
BA Education	EDCA	Koushmita Das
BA Education	EDCA	Moonmoon Mondal
BA Education	EDCA	Rituparna Pal
BA Education	EDCA	Riya Naskar
BA Education	EDCA	Rohini Ghosh
BA Education	EDCA	Rohit Makal
BA Education	EDCA	Sadhana Mondal
BA Education	EDCA	Sanchita Barman
BA Education	EDCA	Subrata Mondal
BA Education	EDCA	Sudipta Mallick
BA Education	EDCA	Sudipta Panda
BA Education	EDCA	Sukla Sardar
BA Education	EDCA	Tamali Mistri
BA Education	EDCA	Tapu Ghosh
BA Education	EDCA	Joyasree Mondal
BA Education	EDCA	Joydev Patra
BA Education	EDCA	Jui Nath
BA Education	EDCA	Payel Sarkar
BA Education	EDCA	Soma Sardar
BA Education	EDCA	Abhijit Sardar
BA Education	EDCA	Akash Mandal
BA Education	EDCA	Sayandip Halder
BA Education	EDCA	Sayanti Mondal
BA Education	EDCA	Sharmistha Halder
BA Education	EDCA	Sharnali Saha
BA Education	EDCA	Somnath Halder
BA Education	EDCA	Sona Mondal
BA Education	EDCA	Sonali Halder
BA Education	EDCA	Sourav Majhi
BA Education	EDCA	Sovanlal Mondal
BA Education	EDCA	Sushmita Acharya
BA Education	EDCA	Sushmita Jatua

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

BA Education	EDCA	Sushmita Roy
BA Education	EDCA	Arnab Sardar
BA Education	EDCA	Mongal Halder
BA Education	EDCA	Moumita Das
BA Education	EDCA	Nabanita Naskar
BA Education	EDCA	Paromita Acharjee
BA Education	EDCA	Sanjay Kumar Giri
BA Education	EDCA	Satyarup Mondal
BA Education	EDCA	Sayani Roy
BA Education	EDCA	Sonali Shaw
BA Education	EDCA	Sreya Nath
BA Education	EDCA	Suraj Sardar
BA Education	EDCA	Susmita Ghosh
BA Education	EDCA	Goutam Debnath
BA Education	EDCA	Indadulla Molla
BA Education	EDCA	Jaydeep Mondal
BA Education	EDCA	Kamal Biswas
BA Education	EDCA	Rupshi Biswas
BA Education	EDCA	Swathi Bhattacharya
BA Education	EDCA	Uma Mondal

BA Bengali	BNGA	Sayani Laha
BA Bengali	BNGA	Katha Priya Dey
BA Bengali	BNGA	Subho Dalui
BA Bengali	BNGA	Shovana Shyamal
BA Bengali	BNGA	Debabrata Naskar
BA Bengali	BNGA	Sandip Singh
BA Bengali	BNGA	Rojifa Khatun
BA Bengali	BNGA	Piu Saha
BA Bengali	BNGA	Debabrata Naskar
BA Bengali	BNGA	Somu Sasmal
BA Bengali	BNGA	Subha Das
BA Bengali	BNGA	Soma Halder
BA Bengali	BNGA	Anita Tripathi
BA Bengali	BNGA	Subrata Karmakar
BA Bengali	BNGA	Sohini Paul
BA Bengali	BNGA	Aparna Mridha
BA Bengali	BNGA	Aparna Paul
BA Bengali	BNGA	Arup Das
BA Bengali	BNGA	Arup Sarkar
BA Bengali	BNGA	Ashim Halder
BA Bengali	BNGA	Deblina Ghosh
BA Bengali	BNGA	Debraj Sarkar
BA Bengali	BNGA	Deepakshi Bhowmick
BA Bengali	BNGA	Dhiman Biswas
BA Bengali	BNGA	Dip Samanta

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

BA Bengali	BNGA	Mousumi Gayen
BA Bengali	BNGA	Mousumi Sengupta
BA Bengali	BNGA	Nirupama Jana
BA Bengali	BNGA	Nitu Das
BA Bengali	BNGA	Piu Purkait
BA Bengali	BNGA	Priya Roy
BA Bengali	BNGA	Priyanka Das
BA Bengali	BNGA	Provash Naskar
BA Bengali	BNGA	Puja Sardar
BA Bengali	BNGA	Rajesh Halder
BA Bengali	BNGA	Rama Das
BA Bengali	BNGA	Rana Mondal
BA Bengali	BNGA	Rupanjali Roy
BA Bengali	BNGA	Sanatan Sarddar
BA Bengali	BNGA	Sarawati Sardar
BA Bengali	BNGA	Sayan Mondal
BA Bengali	BNGA	Subhodeep Mallick
BA Bengali	BNGA	Suman Mallick
BA Bengali	BNGA	Sumana Paul
BA Bengali	BNGA	Sumi Biswas
BA Bengali	BNGA	Suraj Shek
BA Bengali	BNGA	Jaba Mistri
BA Bengali	BNGA	Jaysree Roy
BA Bengali	BNGA	Jhuma Halder
BA Bengali	BNGA	Karabi Sardar
BA Bengali	BNGA	Prangan Raha Roy
BA Bengali	BNGA	Pratima Halder
BA Bengali	BNGA	Prerana Mishra
BA Bengali	BNGA	Priyanka Halder
BA Bengali	BNGA	Wriddha Mandal
BA Bengali	BNGA	Ruksana Khatun
BA Bengali	BNGA	Neha Dey

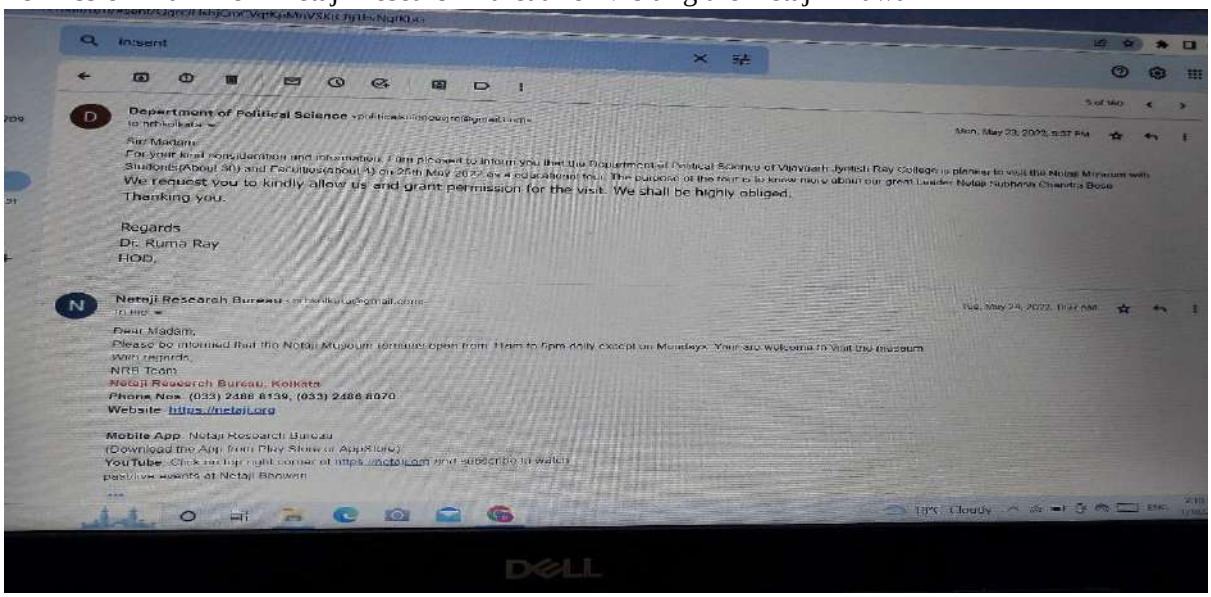
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

VIJAYGARH JYOTISH RAY COLLEGE
DEPARTMENT OF POLITICAL SCIENCE

DEPARTMENTAL EXCURSION
DATE-25TH MAY 2022
VISITING PLACE- NETAJI BHAWAN, KOLKATA

An educational excursion to Netaji Bhawan was organised with students from the Department of Political Science on **25th May 2022**. The aim of the excursion was to inculcate overall knowledge About The freedom fighter Netaji Subash Chandra Bose and his contribution in the freedom movement of India. A total of 30 students along with the 5 faculty members attended the excursion.

Permission Mail From Netaji Research Bureau for Visiting the Netaji Bhawan



List of Students:

SL. No.	Student Name	Semester
1	Hrithik Bhattacharjee	IV
2	Sourav Datta	IV
3	Sneha Saha	IV
4	Bristi Halder	IV
5	Tanusree Mistri	IV
6	Sk Samima	IV
7	Mriganko Chakraborty	IV
8	Madhumita Jana	IV
9	Sonali Das	IV
10	Ankita Dey	IV

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

11	Priya Mondal	IV
12	Joy Naskar	IV
13	Riya Naskar	IV
14	Barsha Mondal	IV
15	Mitali Mondal	IV
16	Dip mondal	IV
17	Gouri Sardar	IV
18	Santanu Roy	IV
19	Atashreee Mondal	II
20	Moli Mondal	II
21	Kabita Halder	II
22	Roni roy	II
23	Piu Halder	II
24	Piyali Mondal	II
25	Puspita Das	II
26	Himadhri Mridha	II
27	Papiya Ghosh	II
28	Mayarani Naskar	II
29	Shouvik naskar	II
30	Rajat singh	II

Students list with their signature-
https://drive.google.com/file/d/1wvkxA6_yXL4xvBC6XK6sIve51VR4oxf6/view?usp=sharing

List of Faculty:

SL. No.	Teacher Name	Designation
1	Dr. Ruma Ray	Assistant Professor
2	Md Jamirul Islam	Assistant Professor
3	Dr. Anindita Sarker	SACT
4	Barsha Lahiri	SACT
5	Amrapali Bose	SACT

Report of the Visit:
An educational tour was organized on 25 th November ,2022 by the dept. of political science, Vijaygarh Jyotish Ray College. Approximately 30 students along with departmental faculties attendedthis excursion. The primary motive of this arrangement was to the students the lifetime achievements of Subhas Chandra Bose, who enriched the freedom movement of India with his new ideologies. An applaudable effort has been taken by both Central and state government of India to protect the historical evidences of Netaji's active involvement in the freedom movement. From his initial engagement as an active congressman, until his endeavor to form All India Forward Bloc. His ideas of nationalism has been an inspiring chapter in the freedom movement of India. Furthermore, we were blessed to meet Prof. Sugata Bose, Netaji's nephew and he also narrated few stories about life and works of Bose. This meeting have added an extra feather of knowledge to our trip. Thus, with this one-day trip to Subhas Chandra Bose 's house in elgin road, Bhawanipur, Kolkata has enriched both teachers and students with life time works and achievements of this eminent freedom fighter.

Some Pictures of Field Visit

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

PROGRAMME: ***Pilot visit on Socio Economic Survey***

DATE: 23rd December, 2021

AREA: Gopal Nagar, Kheyada, Kathipota GP, Nayabad, Village: PS: Narendrapur, PO: Nayabad Kolkata-700150

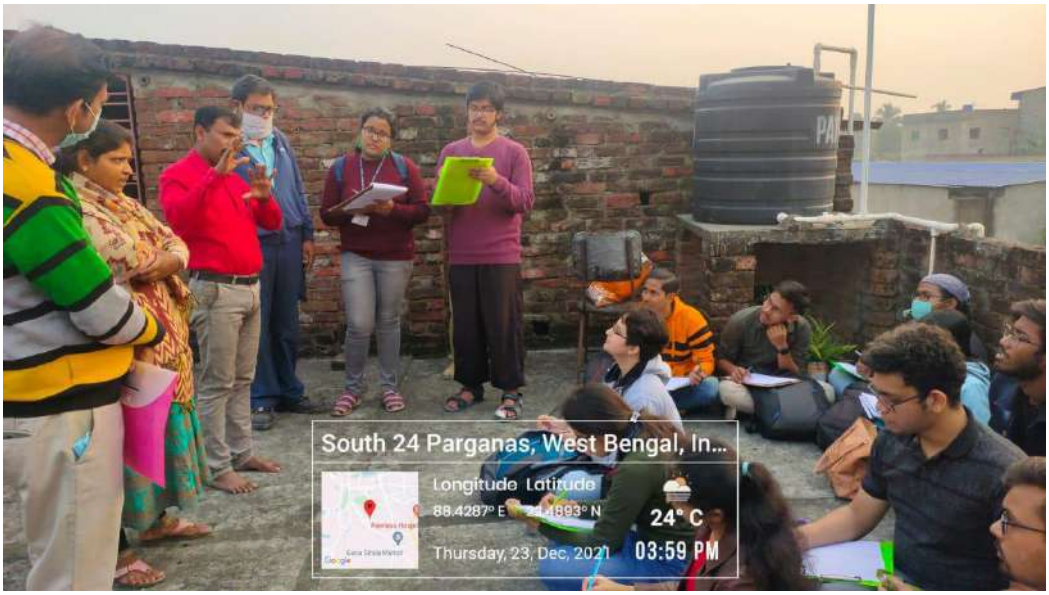
Purpose of the Visit: To get a preliminary idea about the Socio-economic structure of a village locality.

~~PARTICIPANT'S PROFILE:~~ Total 15 students participated in the survey work.

DESCRIPTION OF THE PROGRAMME: This program is organized by Department of Economics with Anandapally Nivedita Academy (NGO). Each student surveyed two families. Total 30 families were surveyed with a short scientific questionnaire.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Socio-Economic Survey was organized by Economics Department, on 23.12.21



Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Phone : 2412-4082

VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to The University of Calcutta)
8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032
ACCREDITED BY THE NAAC - B+ Grade.

Ref. No. 5228A

O/C

Date. 22.12.2021

মাননীয়, সভাপতি
কার্তিক ভান্ডারী
গোপালনগর, সুভাষ পল্লী উন্নয়ন কমিটি
গোপালনগর, কাঠি পোতা,
পোস্ট-নয়াবাদ, সোনারপুর, থানা- নরেন্দ্রপুর
পিন কোড- ৭০০১৫০

বিষয়: সামাজিক এবং অর্থনৈতিক বিষয় সমীক্ষা এবং জনসচেতনতা

মহাশয়/ মহাশয়া,

আমরা বিজয়গড় জ্যোতিষ রায় কলেজ এর অধ্যাপক-অধ্যাপিকাসহ ছাত্র- ছাত্রীরা আগামী ২৩/১২/২০২১ তারিখ আপনার অঞ্চলে বাড়ি বাড়ি গিয়ে সামাজিক এবং অর্থনৈতিক বিষয় একটি সমীক্ষা এবং স্বাস্থ্য ও পুষ্টি-সচেতনতা বিষয়ে আলোচনা করতে চাই।

এ বিষয়ে আপনার অনুমতি এবং প্রত্যক্ষ সহযোগিতা কামনা করি।

ধন্যবাদসহ

রাজশ্রী নিয়োগী 22.12.

ড. রাজশ্রী নিয়োগী

অধ্যক্ষা, বিজয়গড় জ্যোতিষ রায় কলেজ
কলকাতা- ৩২

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

সার্টিফায়েড কপি

22-12-2021

Vijaygarh Jyotish Ray College

PROGRAMME: ***Visit to a production unit (Industrial Survey)***

DATE: 27th December, 2021

ADDRESS: S.P Engineering Works (7, Vivekananda Sarani Kolkata-700075).

Purpose of the Visit: This is basically a pilot visit. We are trying to get an idea about the impact of corona pandemic on the production structure (Lathe Machine Company).

~~PARTICIPANT'S PROFILE:~~ Total 15 students participated in the visit. All are from Economics Honours department (SEM I, SEM II, SEM III)

DESCRIPTION OF THE PROGRAMME: This program is organized by Department of Economics with Anandapally Nivedita Academy (NGO). Students have asked different questions regarding production unit to all the workers as well as the owner of the production unit.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

A Small Industrial Visit (Lathe machine Co.) was organized by Dept. of Economics, VJRC on 27.12.2021.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

To

The Principal

VJRC, Kolkata

Sub: Permission for the Industrial visit

Respected Madam

It is for your kind information that the department of Economics is going to organize one Industrial Visit on 27.12.2021 at 3.00 p.m with our departmental Honours (Ist Sem, 3rd sem and 5th Semester) students. The detail of the Industrial Unit with address is given below:

S.P.ENGINEERING WORKS
7, VIVEKANADA SARANI
KOLKATA-700075

In this connection, I need your kind permission for the said visit.

Thanking You

Regards

Abhijit Das
22/12/21

Dr. Abhijit Das, HOD

&

Dr. Isita Mukherjee

R.S 22.12.21

Vijaygarh Jyotish Ray College

PROGRAMME: ***Awareness Program on Food for Nutrition & Immunity and Awareness on AIDS.***

DATE: 28.12.2021

ADDRESS: Jaykrishnapur Chiari, Bon Hugli, Thana: Narendrapur, South 24 Pargana

PURPOSE OF THE VISIT: The said program is structure for two purposes:

a. To guide people about Food habits to improve the immunity during to fight against the covid-19
b. Aware people about AIDS.

PARTICIPANT'S PROFILE: Total 30 students have participated in the visit. Among them 15 students from the department of Economics.

DESCRIPTION OF THE PROGRAMME: This program is jointly organized by the Department of Economics, Department of Journalism and Mass Communication and NSS unit of VJRC under the scheme of Unnat Bharat Abhiyan. Students conducted a group discussion with village people to discuss how to make foods in a scientific way. They also used photography on fruit and Vegetables. They also aware about the problems of AIDS.

Rajyasri Mukherjee

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

PROGRAMME: ***Socio-Economic Survey and Public Awareness about Arsenic Pollution in Drinking Water***

DATE: 28th December, 2021

ADDRESS: Jaykrishnapur Chiari, Bon Hugli, Thana: Narendrapur, South 24 Pargana

Purpose of the Visit: The said visit was conducted for two purposes a) to get an idea about the socio- economic condition of a village locality b) aware people about the danger of groundwater arsenic pollution problem in West Bengal.

~~PARTICIPANT'S PROFILE:~~ Total 15 students participated in the visit. All are from Economics Honors department (SEM I, SEM III, SEM IV)

DESCRIPTION OF THE PROGRAMME: This program is organized by Department of Economics with Anandapally Nivedita Academy (NGO). Each student surveyed two families. Total 30 families were surveyed. We also made Focused Group Discussion (FGD) to aware the local people about this arsenic pollution.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Economic Survey and Awareness about arsenic in water was organized on 28.12.2021

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

To

The Principal

VJRC, Kolkata

Respected Madam

This is for your kind information that we have successfully completed the field visit jointly by Economics department, journalism & Mass Communication Department in collaboration with College NSS Unit where total 40 candidates including our college Teachers & staff on 28.12.2021. In this connection total Rs.6152/-(Rupees Six Thousand One Hundred and Fifty Two only) and total Rs.6500/- (Rupees Six Thousand Five Hundred only) was take as an advance amount. So, please do the needful for the adjustment of the expenditures. Details statements of the expenditures are hereby enclosed with the application.

Thanking you

Regards

Dr. Abhijit Das

HOD, Department of Economics

Dr. Arnab Kr. Banerjee

HOD, Department of journalism & Mass Communication

18/2/22

18.2.22
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

PROGRAMME: ***Awareness camp on Ecofriendly products, pesticides etc. And organizing different Sports activities.***

DATE: 31.12.2021

ADDRESS: Jaykrishnapur Chiari, Bon Hugli, Thana: Narendrapur, South 24 Pargana

PARTICIPANT'S PROFILE: Total 30 students have participated in the visit.

DESCRIPTION OF THE PROGRAMME: This program is jointly organized by NSS unit, VJRC, the Department of Economics and Department of Journalism and Mass Communication under Unnat Bharat Abhiyaan. Students where actively participated in the awareness camp on Ecofriendly products as pesticides etc.

Students have organized different sports activities, especially for children of the area.

Geo-tagged Photos:

Rajyasri Mooy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

To

The Principal

VJRC, Kolkata

Respected Madam

This is for your kind information that we have successfully completed the field visit cum awareness programme jointly cum by Economics department, journalism & Mass Communication Department in collaboration with College NSS Unit-1 where total 22 candidates including our college Teachers & staff on 31.12.2021. In this connection total Rs.7468/-(Rupees Seven Thousand Four Hundred and Sixty Eight only) and total Rs.6500/- (Rupees Six Thousand Five Hundred only) was take as an advance amount. So, please do the needful for the adjustment of the expenditures. Details statements of the expenditures are hereby enclosed with the application.

Thanking you

Regards

Isita Mukherjee

Dr. Isita Mukherjee

Assistant Professor, Department of Economics

Mainak Saibya

Mainak saibya

Assistant Professor, Department of Education

18/2/22

R.S 18.2.22

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

EXCURSION REPORT
SASHYA SHYAMALA
ARAPANCH

REPORT

Programme: Field visit to Sasya Shyamala Krishi Vigyan Kendra, RKM, Arapanch, West Bengal

Date: 16. 02. 2022

Locality: Sasya Shamala Krishi Vigyan Kendra, RKM, Arapanch, West Bengal

Purpose of the visit: The said visit was conducted for the following purposes

To have an idea about the cultivation of major cereals, oilseeds, pulses and other agriculture and horticultural practices.

Participant's profile: Total 12 students of 4th Semester Botany Honours (CBCS) participated in the visit.

Description of the programme:

- This field visit was organised by Department of Botany, Vijaygarh Jyotish Ray College.
- 12 students of 4th Semester Botany Honours (CBCS) along with departmental teachers and non teaching staffs participated in this field visit.
- They studied the cultivation process of major cereals, oilseeds and pulses.
- They visited the seed processing unit, soil and water testing laboratory and plant health diagnostic laboratory.
- They visited the demonstration and production unit of vermicompost and tricho-compost,mushroom culture and Azolla unit.
- They were given a brief idea about multilayer cultivation.
- They visited agricultural machinaries and implement house showing nail weeder, instrument for jute cultivation, seed cum fertilizer drill paddy transplanter, automatic harvester.
- They also had a brief idea about integrated farming system.
- Photographs of different plants were taken for documentation.
- The field trip helps to strengthen their theoretical knowledge and bring classroom to nature.

Rajyasri Roy

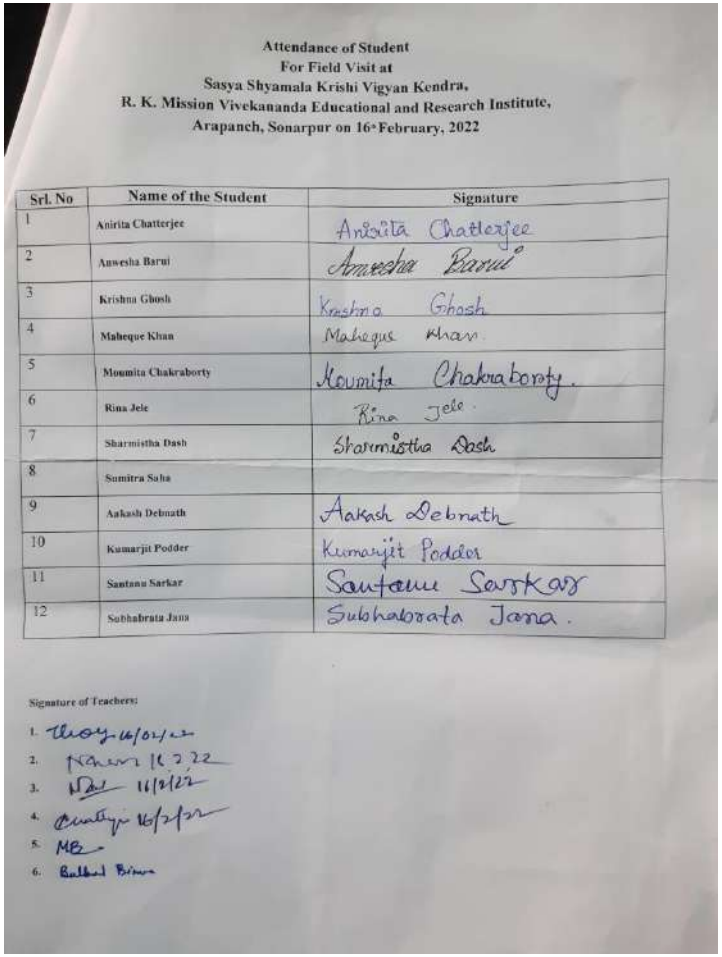
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

PHOTOGRAPH

Rajyasri Mukherjee

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

ATTENDANCE



Attendance of Student
For Field Visit at
Sasya Shyamala Krishi Vigyan Kendra,
R. K. Mission Vivekananda Educational and Research Institute,
Arapanch, Sonarpur on 16th February, 2022

Srl. No	Name of the Student	Signature
1	Anirita Chatterjee	Anirita Chatterjee
2	Anwesha Barui	Anwesha Barui
3	Krishna Ghosh	Krishna Ghosh
4	Maheque Khan	Maheque Khan
5	Moumita Chakraborty	Moumita Chakraborty.
6	Rina Jele	Rina Jele.
7	Sharmistha Dash	Sharmistha Dash
8	Sumitra Saha	
9	Aakash Debnath	Aakash Debnath
10	Kumarjit Podder	Kumarjit Podder
11	Santanu Sarkar	Santanu Sarkar
12	Subhabrata Jana	Subhabrata Jana.

Signature of Teachers:

1. 16/02/22
2. 16/2/22
3. 16/2/22
4. 16/2/22
5. MB
6. Bulbul Biswas

Rajyasri Principal

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

LETTER OF PERMISSION

To,
The Head,
Sasya Shyamala Krishi Vigyan Kendra,
R. K. Mission Vivekananda Educational and Research Institute.
Arapanch,
P.O.- Sonarpur
Dist.- South 24 Paraganas
Kolkata – 700-150

Seeking for Permission for a Field Visit

Respected Sir,

On behalf of the Dept of Botany, Vijaygarh Jyotish Ray College, I'm seeking your permission to conduct a field visit to your institute with 12 (twelve) Botany (Honours) students of our Department of 4th semester, to have an idea about cultivation of crop. They will make a Field Record of the visit that is included in their syllabus.

Students will be highly benefitted to get this opportunity. Hope you will do the needful.

Thanking you.

Urmi Roy

Date: 12.02.2021

Place: Kolkata

Dr. Urmi Roy
Head of the Department of Botany
Vijaygarh Jyotish Ray College

Rajyasri Mukherjee

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

CERTIFICATE

CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Aakash Debnath

4th Semester 2022, Botany Honors, VJRC

For Participation in the Field Visit at

Sasya Shyamala Krishi Vigyan Kendra, RKMVERI

Organized on February 16, 2022

by

Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

Head
Sasya Shyamala Krishi Vigyan Kendra
RKMVERI

Head
Dept of Botany
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College

CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Anirita Chatterjee

4th Semester 2022, Botany Honors, VJRC

For Participation in the Field Visit at

Sasya Shyamala Krishi Vigyan Kendra, RKMVERI

Organized on February 16, 2022

by

Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

Head
Sasya Shyamala Krishi Vigyan Kendra
RKMVERI

Head
Dept of Botany
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College

CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Kumarjit Podder

4th Semester 2022, Botany Honors, VJRC

For Participation in the Field Visit at

Sasya Shyamala Krishi Vigyan Kendra, RKMVERI

Organized on February 16, 2022

by

Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

Head
Sasya Shyamala Krishi Vigyan Kendra
RKMVERI

Head
Dept of Botany
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College

CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Moumita Chakraborty

4th Semester 2022, Botany Honors, VJRC

For Participation in the Field Visit at

Sasya Shyamala Krishi Vigyan Kendra, RKMVERI

Organized on February 16, 2022

by

Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

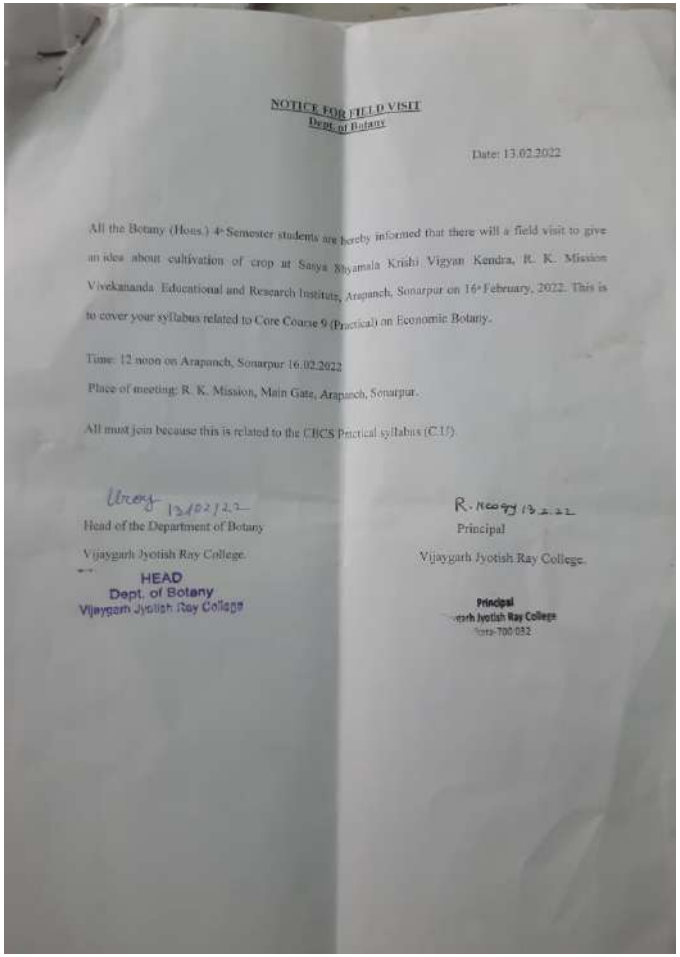
Head
Sasya Shyamala Krishi Vigyan Kendra
RKMVERI

Head
Dept of Botany
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

NOTICE



NOTICE FOR FIELD VISIT
Dept. of Botany

Date: 13.02.2022

All the Botany (Hons.) 4th Semester students are hereby informed that there will a field visit to give an idea about cultivation of crop at Satya Shyamala Krishi Vigyan Kendra, R. K. Mission Vivekananda Educational and Research Institute, Arapanch, Sonarpur on 16th February, 2022. This is to cover your syllabus related to Core Course 9 (Practical) on Economic Botany.

Time: 12 noon on Arapanch, Sonarpur 16.02.2022

Place of meeting: R. K. Mission, Main Gate, Arapanch, Sonarpur.

All must join because this is related to the CBCS Practical syllabus (C.U).

13/02/22
Head of the Department of Botany
Vijaygarh Jyotish Ray College.

HEAD
Dept. of Botany
Vijaygarh Jyotish Ray College

R. Neogy 13.2.22
Principal
Vijaygarh Jyotish Ray College.

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Rajyasri Neogy
Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

LAB VISIT SUDIPTO RAY

02.05.2022

REPORT

Programme: Visit to molecular biology laboratory of Dr. Sudipto Roy, Ballygunge Science College to study the different molecular biological and tissue culture techniques

Date: 02.05.2022

Venue: Molecular biology laboratory of Dr. Sudipto Roy, Ballygunge Science College

Purpose of the visit: The said visit was conducted for the following purposes

- To know the different instruments used in Molecular biology and tissue culture experiments.
- To study in detail the DNA isolation techniques.
- To study in detail the Gel electrophoresis technique
- To study different tissue culture techniques

Participant's profile: Total 13 students of 6th Semester Botany Honours (CBCS) participated in the visit.

Description of the programme:

- This Laboratory visit was organised by Department of Botany, Vijaygarh Jyotish Ray College.
- 13 students of 6th Semester Botany Honours (CBCS) along with departmental teachers participated in this laboratory visit.
- They studied different instruments used in Molecular biology and tissue culture experiments.
- They studied in detail the DNA isolation technique and gel electrophoresis technique.
- They also studied different tissue culture techniques
- The laboratory visit helped to strengthen their theoretical knowledge about molecular biology and tissue culture.

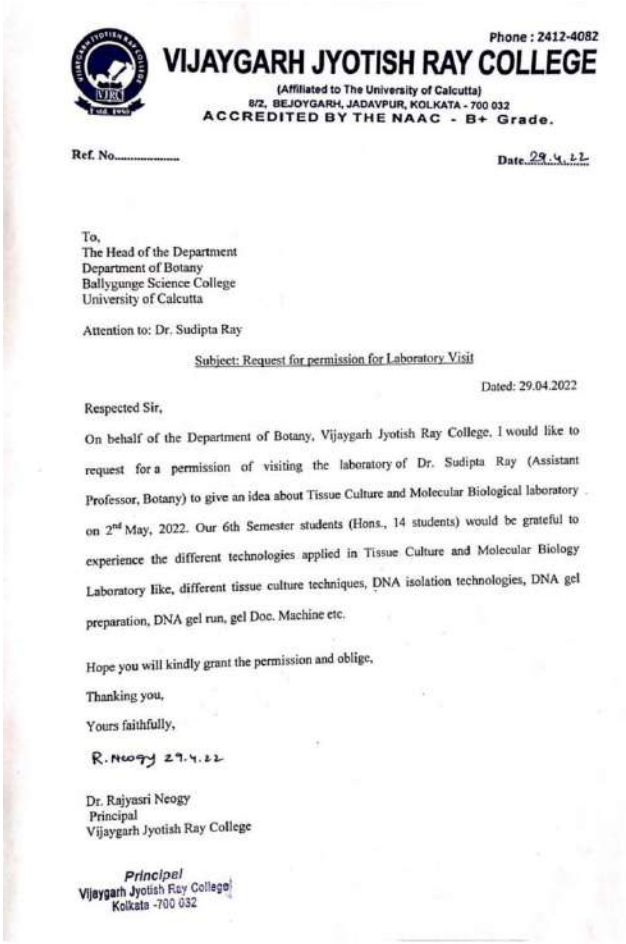
Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

PHOTOGRAPHS

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

PERMISSION LETTER



Phone : 2412-4082

VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to The University of Calcutta)
8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032
ACCREDITED BY THE NAAC - B+ Grade.

Ref. No.....

Date. 29.4.22

To,
The Head of the Department
Department of Botany
Ballygunge Science College
University of Calcutta

Attention to: Dr. Sudipta Ray

Subject: Request for permission for Laboratory Visit

Dated: 29.04.2022

Respected Sir,

On behalf of the Department of Botany, Vijaygarh Jyotish Ray College, I would like to request for a permission of visiting the laboratory of Dr. Sudipta Ray (Assistant Professor, Botany) to give an idea about Tissue Culture and Molecular Biological laboratory on 2nd May, 2022. Our 6th Semester students (Hons., 14 students) would be grateful to experience the different technologies applied in Tissue Culture and Molecular Biology Laboratory like, different tissue culture techniques, DNA isolation technologies, DNA gel preparation, DNA gel run, gel Doc. Machine etc.

Hope you will kindly grant the permission and oblige,

Thanking you,

Yours faithfully,

R. Neogy 29.4.22

Dr. Rajyasri Neogy
Principal
Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata -700 032

Rajyasri Neogy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

ATTENDANCE

Dept. of Botany

Laboratory visit

Semester- I/II/III/IV/V/VI (Hons/General) ✓ VI, Hons **Date:** 02·05-22

Sl. No	Name in block	Signature
1	SOUMANTIKA GHOSH	Soumantika Ghosh
2	ROHIT KUMAR DUTTA	Rohit K. Dutta
3	Ankita Majumder	Ankita Majumder
4	INJUMUL MOLLA	Injamul Molla
5	SAMIM MOLLA	Samim Molla
6	SUSMITA ROY	Susmita Roy
7	MAHESHWARI SAHA	Maheswari Saha
8	TANYA SINGH	Tanya Singh
9	SHAONEE SARKAR	Shaonee Sarkar
10	SHALINI SAHA	Salini Saha
11	SAGAR GAYEN	Sagar Gayen
12	JOYEETA ADHIKARY	Joyeeta Adhikary
13	SUBHAM BISWAS	Subham Biswas
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		

Signature of Teachers:

1. Urmi Roy 2/5/22
2. [illegible] 2/5/2022
3. [illegible]
4. [illegible] 2/5/22

Rajyasri [illegible]

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

CERTIFICATES


CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Ankita Majumder

of

6th Semester, 2022, Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

For participating in visiting the Laboratory of

Dr. Sudipta Ray, Assistant Professor, Botany, Ballygunge Science College, Kolkata

on 02.05.2022

Organized by

Department of Botany, Vijaygarh Jyotish Ray College, Kolkata

Assistant Professor
Dept. of Botany
Ballygunge Science College

Head
Dept of Botany

Principal
Vijaygarh Jyotish Ray College, Kolkata

Date: May 02, 2022


CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Jayeeta Adhikary

of

6th Semester, 2022, Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

For participating in visiting the Laboratory of

Dr. Sudipta Ray, Assistant Professor, Botany, Ballygunge Science College, Kolkata

on 02.05.2022

Organized by

Department of Botany, Vijaygarh Jyotish Ray College, Kolkata

Assistant Professor
Dept. of Botany
Ballygunge Science College

Head
Dept of Botany

Principal
Vijaygarh Jyotish Ray College, Kolkata

Date: May 02, 2022


CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

Maheshwari Saha

of

6th Semester, 2022, Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

For participating in visiting the Laboratory of

Dr. Sudipta Ray, Assistant Professor, Botany, Ballygunge Science College, Kolkata

on 02.05.2022

Organized by

Department of Botany, Vijaygarh Jyotish Ray College, Kolkata

Assistant Professor
Dept. of Botany
Ballygunge Science College

Head
Dept of Botany

Principal
Vijaygarh Jyotish Ray College, Kolkata

Date: May 02, 2022


CERTIFICATE OF PARTICIPATION

This certificate is proudly presented to

MD Injamul Haque Molla

of

6th Semester, 2022, Department of Botany

Vijaygarh Jyotish Ray College, Kolkata

For participating in visiting the Laboratory of

Dr. Sudipta Ray, Assistant Professor, Botany, Ballygunge Science College, Kolkata

on 02.05.2022

Organized by

Department of Botany, Vijaygarh Jyotish Ray College, Kolkata

Assistant Professor
Dept. of Botany
Ballygunge Science College

Head
Dept of Botany

Principal
Vijaygarh Jyotish Ray College, Kolkata

Date: May 02, 2022

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Sample of Project Work & Cover Page of some Project Work

Vijaygarh Jyotish Ray College

UNIVERSITY OF CALCUTTA

STUDY OF CIRCADIAN FUNCTIONS IN HUMANS

ROLL NO : 193058-21-0060

REGISTRATION NO : 058-1111-0382-19

SEMESTER : VI, SUBJECT : ZOOA

EXAMINATION : B.Sc HONOURS

PAPER : DSE(B) [ANIMAL BEHAVIOUR AND CHRONOBIOLOGY]

Rajyasri Mooy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

ABSTRACT

Circadian rhythms are 24-hour cycles that are part of the body's internal clock, running in the background to carry out essential functions and processes .It basically refers to daily rhythm in physiology and behaviour. It collectively controls food consumption, physical activity, sleep wake cycle and regulates temperature as well.

Vijaygarh Jyotish Ray College

CONTENT

Vijaygarh Jyotish Ray College

ACKNOWLEDGEMENT

I would like to extend my gratitude to my Head of the Department (HOD) Dr. Pinakiranjan Chakraborty and Professors, Smt. Aditi Ghosh and Smt. Ranita Bhattacharya, who gave this wonderful opportunity to present this project on such an interesting topic which also enriched my knowledge in this field as it was a continuous process of learning, understanding, assimilating and presenting the things I learned in this process. I am greatly thankful to them as without their help and support, this project would not have been completed.

Vijaygarh Jyotish Ray College

INTRODUCTION

Biological rhythms are self – sustaining natural cycles of animal life history which maintain themselves regardless of the environmental factors. All animals possess innate biological clocks which are driven by the biochemical mechanisms .Most living organisms are exposed to the rhythms of the solar system. Rhythmicity is a wonderful phenomenon of nature. Various kinds of rhythms are evident The term circadian was coined by Franz Halberg in 1959. According to Halberg's original definition:The term "circadian" was derived from circa (about) and dies (day); it may serve to imply that certain physiologic periods are close to 24 hours, if not exactly that length. Herein, "circadian" might be applied to all "24-hour" rhythms, whether or not their periods, individually or on the average, are different from 24 hours, longer or shorter, by a few minutes or hours. In the biological world day-night cycle, seasonal cycle, moon and tide cycle etc. Animals during the course of evolution have acquired a variety of endogenous rhythms, whose periods are matched with those rhythmic events in the environment. Bunning (1936) was the first biologist to carry out extensive work on biological rhythms.

Vijaygarh Jyotish Ray College

BIOLOGICAL RHYTHMS

The various types of biological rhythms are :-

- ❖ Circannual Rhythm.
- ❖ Circalunar Rhythm.
- ❖ Circatidal Rhythm.
- ❖ Semilunar Rhythm.
- ❖ Circadian rhythm.

Circannual Rhythms:

They show one-year periodicity, e.g. a large number of animals reproduce once in a year. Flowering in plants also takes place once a year. Insects and amphibians follow a cycle of hibernation and activity. Hummingbirds in South America move to the caves and become inactive in winter in the Andes. Famous migration of Monarch butterflies from North America to Mexico and back follows an annual cycle. Millions of these butterflies cover a distance of 3200 km to hibernate on trees in San Francisco. Many beetle species hibernate under the snow in Himalaya. Arctic and Antarctic animals generally follow annual cycles of activity.

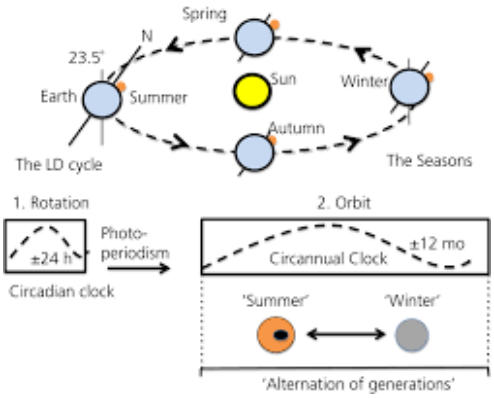


Fig: Circannual Rhythms

Circalunar Rhythms :

These rhythms synchronize with the 28 day phases of moon and tidal rhythms. Palolo worm lives in deep sea but swims to surface on the first day of the first quarter of moon in November in Fiji. The sea hare *(Aplysia)* shows periodicity which is exactly half of the lunar cycle.

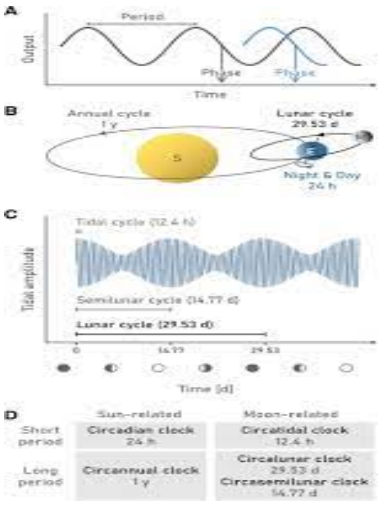


Fig: Circannual Rhythm.

Vijaygarh Jyotish Ray College

Circatidal rhythms :

These follow a 12.4 or 24.8 hour cycle that is synchronized with low and high tides twice a day. Animals living in burrows, such as polychaetes, planarians, crab etc. are submerged and exposed alternately and in the process get food brought by water currents. Bivalves such as *Mytilus* showed shell opening rhythm according to circatidal rhythms even when kept in the lab. Grunion fish spawn precisely at high tides.

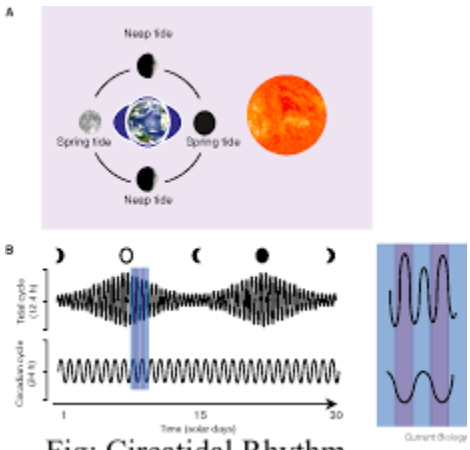


Fig: Circatidal Rhythm

Circadian rhythm :

The term 'circadian' originated from two Latin words, *circa* meaning about and *dian* meaning a day. These rhythms follow a 24 hour cycle of activity and sleeping synchronized with light and darkness. So, the animals can be classified as nocturnal, diurnal and crepuscular, the last ones are active at sunrise and sunset. Birds are mostly diurnal and bats nocturnal which find their way by echolocation. Body metabolism and release of hormones are synchronized with a 24 hour cycle.

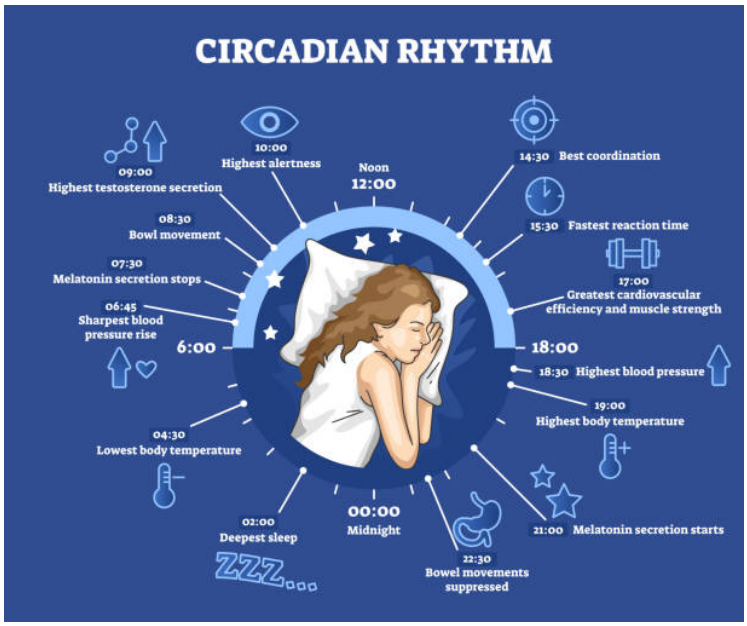


Fig: Circadian Rhythm

Vijaygarh Jyotish Ray College

CIRCADIAN CYCLE

Circadian rhythm is the 24-hour internal clock in our brain that regulates cycles of alertness and sleepiness by responding to light changes in our environment. Our physiology and behavior are shaped by the Earth's rotation around its axis.

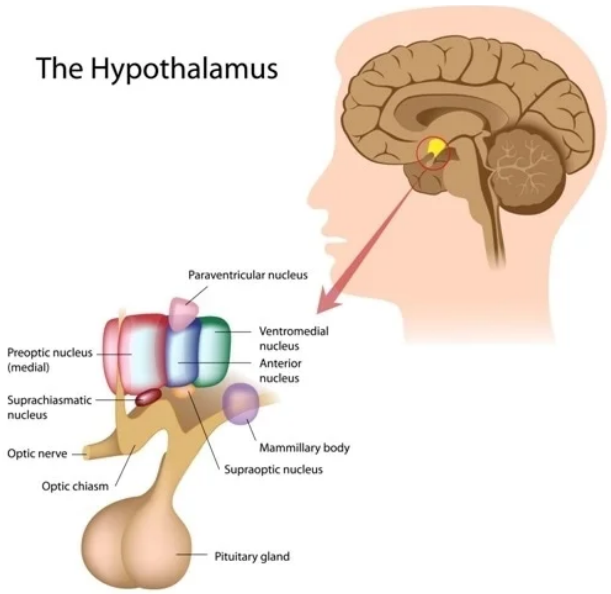


Fig: Location of Suprachiasmatic Nucleus

The primary circadian clock in humans is located in the suprachiasmatic nucleus (or nuclei) (SCN), a pair of distinct groups of cells located in the hypothalamus. Destruction of the SCN results in the complete absence of a regular sleep–wake rhythm.

The SCN receives information about illumination through the eyes. The retina of the eye contains "classical" photoreceptors ("rods" and "cones"), which are used for conventional vision. But the retina also contains specialized ganglion cells that are directly photosensitive, and project directly to the SCN, where they help in the entrainment (synchronization) of this master circadian clock.These cells contain the photopigment melanopsin and their signals follow a pathway called the retinohypothalamic tract, leading to the SCN. If cells from the SCN are removed and cultured, they maintain their own rhythm in the absence of external cues.

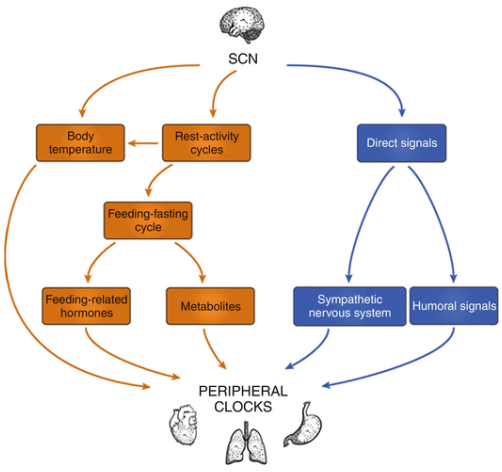


Fig: Role of SCN in Circadian Rhythm

The SCN takes the information on the lengths of the day and night from the retina, interprets it, and passes it on to the pineal gland, a tiny structure shaped like a pine cone and located on the epithalamus. In response, the pineal secretes the hormone melatonin. Secretion of melatonin peaks at night and ebbs during the day and its presence provides information about night-length. Several studies have indicated that pineal melatonin feeds back on SCN rhythmicity to modulate circadian patterns of activity and other processes. However, the nature

Vijaygarh Jyotish Ray College

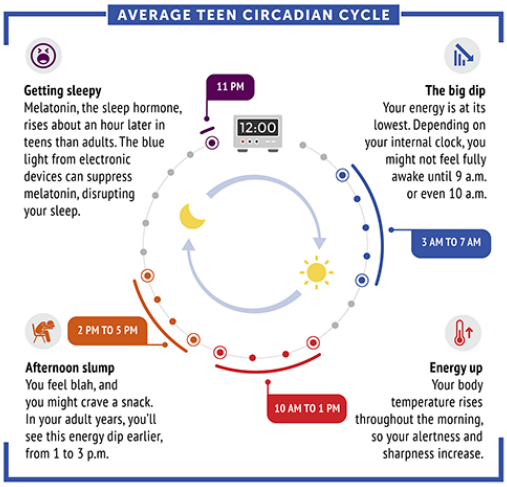
and system-level significance of this feedback are unknown. The circadian rhythms of humans can be entrained to slightly shorter and longer periods than the Earth's 24 hours. Researchers at Harvard have shown that human subjects can at least be entrained to a 23.5-hour cycle and a 24.65-hour cycle (the latter being the natural solar day-night cycle on the planet Mars).

Biological markers and effects

The classic phase markers for measuring the timing of a mammal's circadian rhythm are:

- ❖ melatonin secretion by the pineal gland.
- ❖ core body temperature minimum.
- ❖ plasma level of cortisol.

For temperature studies, subjects must remain awake but calm and semi-reclined in near darkness while their rectal temperatures are taken continuously. Though variation is great among normal chronotypes, the average human adult's temperature reaches its minimum at about 5:00 a.m., about two hours before habitual wake time. Baehr et al found that, in young adults, the daily body temperature minimum occurred at about 04:00 (4 a.m.) for morning types but at about 06:00 (6 a.m.) for evening types. This minimum occurred at approximately the middle of the eight-hour sleep period for morning types, but closer to waking in evening types.



Melatonin is absent from the system or undetectably low during daytime. Its onset in dim light, dim-light melatonin onset (DLMO), at roughly 21:00 (9 p.m.) can be measured in the blood or the saliva. Its major metabolite can also be measured in morning urine. Both DLMO and the midpoint (in time) of the presence of the hormone in the blood or saliva have been used as circadian markers. However, newer research indicates that the melatonin offset may be the

Fig: Sleep-wake cycle

more reliable marker. Benloucif et al.found that melatonin phase markers were more stable and more highly correlated with the timing of sleep than the core temperature minimum. They found that both sleep offset and melatonin offset are more strongly correlated with phase markers more

Vijaygarh Jyotish Ray College

stable than the termination of melatonin synthesis. Other physiological changes that occur according to a circadian rhythm include heart rate and many cellular processes "including oxidative stress, cell metabolism, immune and inflammatory responses, epigenetic modification, hypoxia/hyperoxia response pathways, endoplasmic reticular stress, autophagy, and regulation of the stem cell environment." In a study of young men, it was found that the heart rate reaches its lowest average rate during sleep, and its highest average rate shortly after waking. More-or-less independent circadian rhythms are found in many organs and cells in the body outside the suprachiasmatic nuclei (SCN), the "master clock". Indeed, neuroscientist Joseph Takahashi and colleagues stated in a 2013 article that "almost every cell in the body contains a circadian clock."For example, these clocks, called peripheral oscillators, have been found in the adrenal gland, esophagus, lungs, liver, pancreas, spleen, thymus, and skin. There is also some evidence that the olfactory bulb and prostate may experience oscillations, at least when cultured.

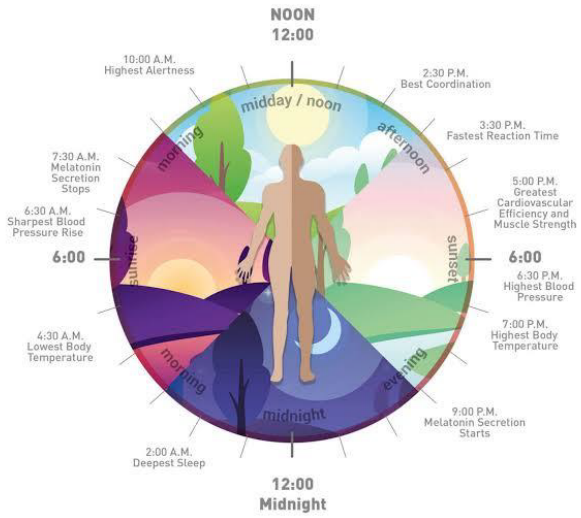


Fig: Effect of light on Circadian Rhythm

What Can Disrupt Circadian Rhythm?

- Jet lag Disorder
- Shift work Disorder
- Delayed Sleep Phase Disorder
- Advanced Sleep Phase Disorder
- Non-24 hour Sleep Wake Disorder
- Irregular Sleep Wake Rhythm Disorder

Vijaygarh Jyotish Ray College

Treatment of Circadian Rhythm disorder :

While we don't have full control over our circadian rhythm, there are healthy sleep tips that can be taken to try to better entrain our 24-hour sleep cycles.

Seek out sun: Exposure to natural light, especially early in the day, helps reinforce the strongest circadian cue.

Follow a consistent sleep schedule: Varying your bedtime or morning wake-up time can hinder your body's ability to adjust to a stable circadian rhythm.

Avoid caffeine: Stimulants like caffeine can keep you awake and throw off the natural balance between sleep and wakefulness. Everyone is different, but if you're having trouble sleeping, you should avoid caffeine after noon.

Limit light before bed: Artificial light exposure at night can interfere with circadian rhythm. Experts advise dimming the lights and putting down electronic devices in the lead-up to bedtime and keeping electronics out of the bedroom and away from your mattress.

Keep naps short and early in the afternoon: Late and long naps can push back your bedtime and throw your sleep schedule off-kilter.

Vijaygarh Jyotish Ray College

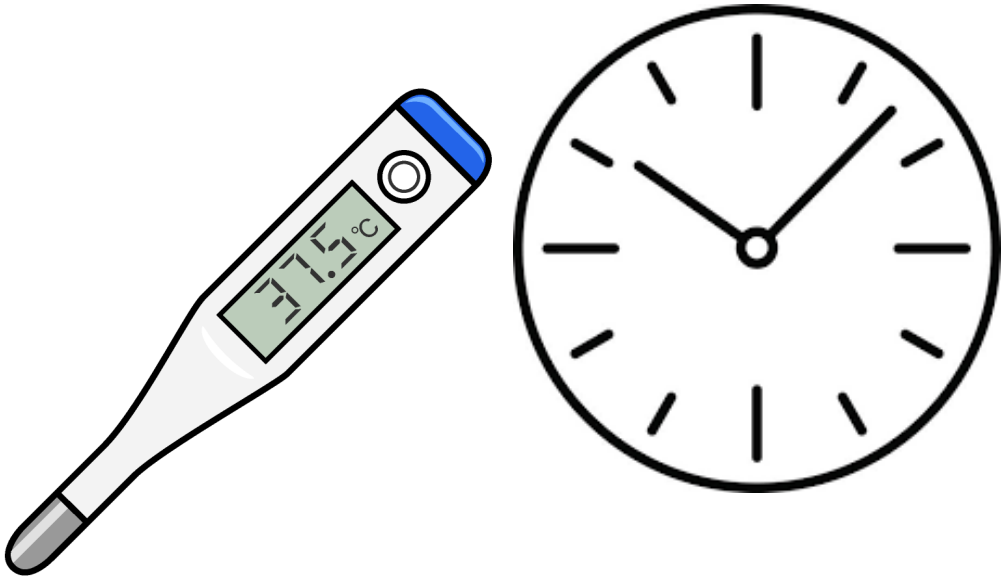
METHODOLOGY

Requirements:

- Thermometer
- Clock

Procedure:

- Body temperature recorded by thermometer in degrees Fahrenheit.
- Lunch time, Dinner time & Bed time are also recorded accordingly in 24 hours format.



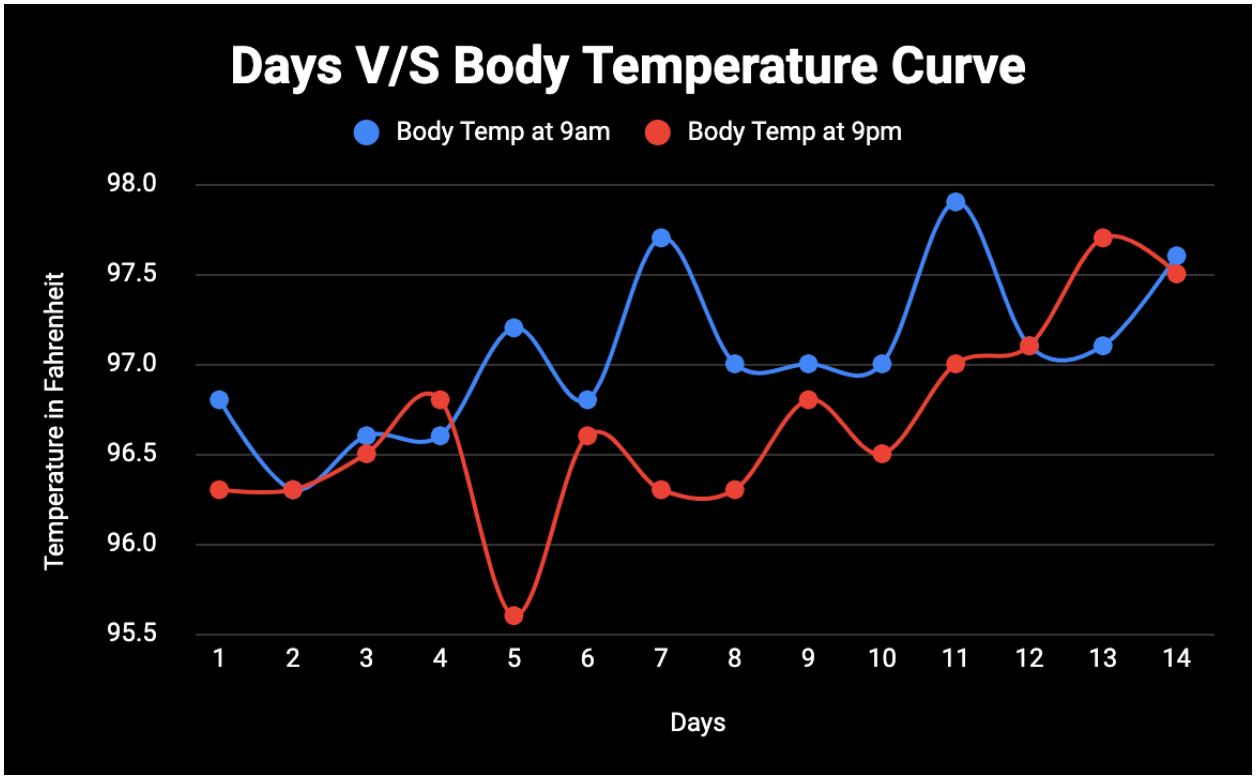
Vijaygarh Jyotish Ray College

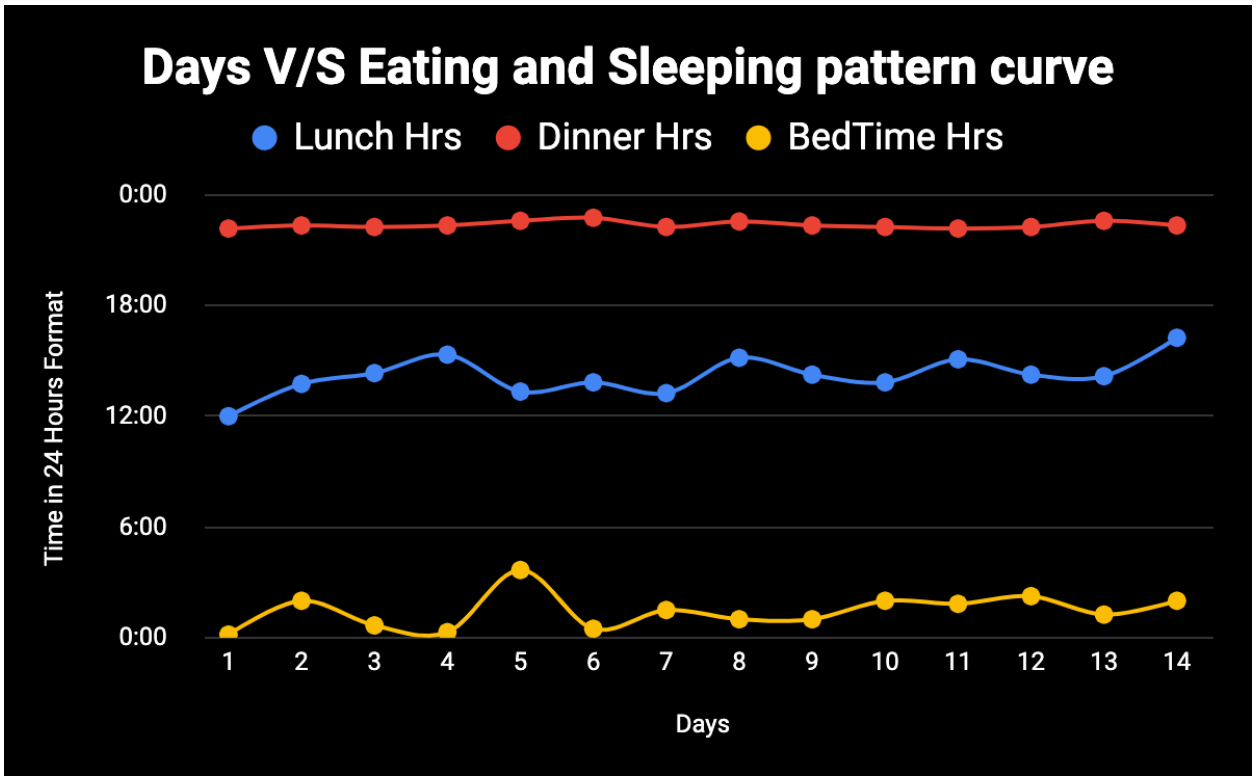
OBSERVATION

Days	Date	Body Temp at 09:00 Hrs. °F	Body Temp at 21:00 Hrs. °F	Lunch Time Hunger	Dinner Time Hunger	Bed Time
1	1/3/22	96.8	96.3	12:00	22:10	0:10
2	2/3/22	96.3	96.3	13:45	22:20	2:00
3	3/3/22	96.6	96.5	14:20	22:15	0:40
4	4/3/22	96.6	96.8	15:20	22:20	0:18
5	5/3/22	97.2	95.6	13:20	22:35	3:40
6	6/3/22	96.8	96.6	13:50	22:45	0:29
7	7/3/22	97.7	96.3	13:15	22:15	1:30
8	8/3/22	97	96.3	15:10	22:33	1:00
9	9/3/22	97	96.8	14:15	22:20	1:00
10	10/3/22	97	96.5	13:50	22:15	2:00
11	11/3/22	97.9	97	15:05	22:10	1:50
12	12/3/22	97.1	97.1	14:15	22:15	2:15
13	13/3/22	97.1	97.7	14:10	22:35	1:15
14	14/3/22	97.6	97.5	16:15	22:20	2:00

Vijaygarh Jyotish Ray College

CURVES





Vijaygarh Jyotish Ray College

ANALYSIS

Body Temperature Curve: This is the subject's (i.e. mine) body temperature curve at a difference of 12 hours. Morning temperature is taken at 09:00 Hrs and body temperature at night at 21:00 Hrs. Days are plotted on the X – axis, starting from March 1st, 2022 till March 14th, 2022. On the Y – axis, respective temperatures are plotted. This time of the year is summer and most of the days are characterized with scorching sun. It is evident, my morning body temperatures range from 96.3°F to 97.9°F and night body temperatures, from 95.6°F to 97.7°F, indicating that I am an early riser. As per my best knowledge, I haven't suffered from any disease or fever within 15 days before or after collection of the data.

Eating & Sleeping Pattern Curve: Days are plotted on X – axis and time of hunger and sleep are plotted on the Y – axis. From the data, it is evident that I sleep between 00:00 Hrs to 02:00 Hrs. Some days are exceptions, due to personal reasons or long afternoon naps. But, the shift does not affect my rising hours. It more or less remains constant. Lunch hours are most of the time intact, between 13:30 Hrs and 14:30 Hrs with an exception of some days due to personal reasons. Dinner time varies according to personal chores to follow, ranging from 22:00 Hrs to 23:00 Hrs. So, there is a healthy gap of 7-8 hours between taking meals. After having dinner, I generally take 1 to 2 hours to go to bed.

Vijaygarh Jyotish Ray College

CONCLUSION

We are warm blooded animals, so temperatures are not altered with environmental conditions. During daytime, body temperature is generally higher than that of the night, because of less melatonin secretion. Melatonin is a sleep hormone. During the day, we are more active as compared to the night. Our BMR is high, our pulse rate is also high and accordingly our body temperature remains high. At night, melatonin secretion starts increasing and we start to feel drowsy, lethargic and body temperature also lowers. Our body is synchronized to the sleeping hours we are accustomed to, since childhood. So before two to three hours of the official bedtime, melatonin secretion starts. Accordingly BMR, pulse rate and body temperature is lowered. But some days it is seen that the condition is reversed or temperatures remain the same, i.e., even at night, body temperature is not lowered. That happens when, after having dinner, the subject starts using a cell phone or is engaged in some kind of activity, due to external or internal cues. Light exposure, as well as individual differences in sensitivity to it, is known to influence circadian rhythms and their disturbance. Melatonin is a photoreceptor. It gets the signal that light is coming through the retina, to the eyes and signals through the optic nerves, the suprachiasmatic nucleus of hypothalamus to the pineal gland to stop the melatonin secretion. This signal remains until and unless the light source is eliminated. Accordingly, our sleep time also gets hampered.

Circadian rhythms influence our behaviour and status of health in profound ways. Maintaining a regular sleep–wake rhythm is clearly beneficial both in disease prevention and better disease management. A synchronization of the activity and sleep periods according to the endogenous circadian rhythms optimize sleep, cognitive processing, metabolic functions, immune functions and mood.

Vijaygarh Jyotish Ray College

REFERENCES

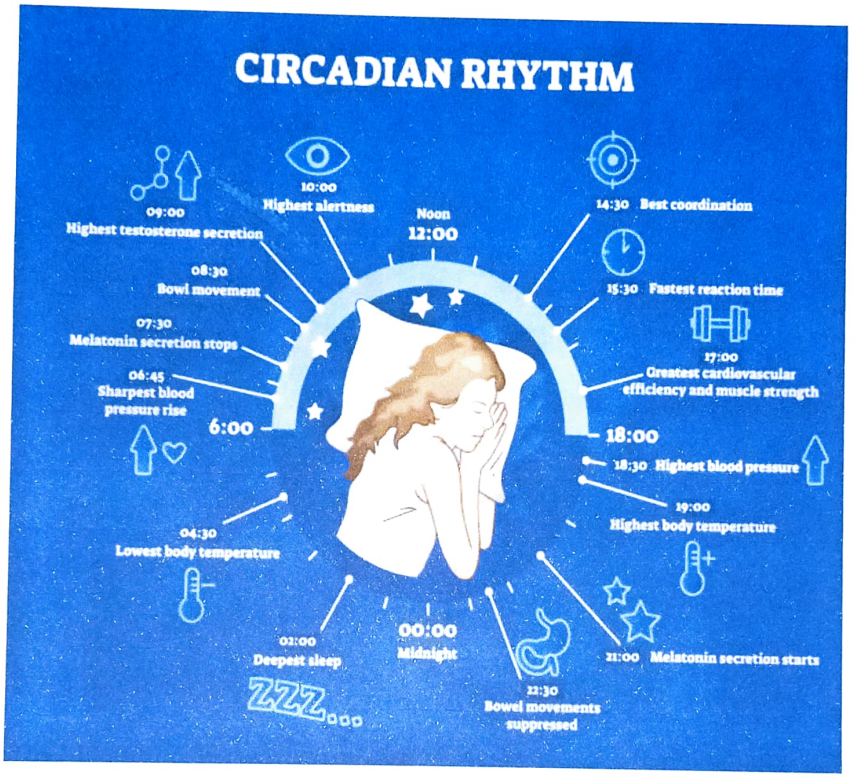
1. Life by Sanjib Chattopadhyay.
2. A Barion, PC Zee - Sleep medicine, 2007 – Elsevier
3. TI Morgenthaler, T Lee-Chiong, C Alessi, L Friedman… - Sleep, 2007
4. B Bjorvatn, S Pallesen - Sleep medicine reviews, 2009 – Elsevier
5. A Germain, DJ Kupfer - Human Psychopharmacology: Clinical …, 2008 - Wiley Online Library
6. EK Baehr, W Revelle, CI Eastman - Journal of sleep research, 2000 - Wiley Online Library
7. J Arendt - 2000 - Mass Medical Soc
8. Images from Google Images.

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

STUDY OF CIRCADIAN FUNCTIONS IN HUMAN

(DAILY EATING SLEEPING AND TEMPERATURE PATTERN)



REGISTRATION NO.: 058-1211-0392-19

ROLL NO.: 193058-11-0055

SUB: ZOOLOGY

EXAMINED
Vijaygarh Jyotish Ray College
Department of Zoology

SEMESTER: VI

PAPER: DSE-B (ANIMAL BEHAVIOUR AND CHRONOBIOLOGY)

TOPIC: STUDY OF CIRCADIAN FUNCTIONS IN HUMANS (Daily eating, Sleep and Temperature patterns)

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

VIJAYGARH JYOTISH RAY COLLEGE

DEPARTMENT OF ZOOLOGY

TO WHOM IT MAY CONCERN

Certified that Sri/Smt. Ruchita Saha, a bonafied student of Zoology (Honours), Semester VI bearing Calcutta University Roll No. 193058-11-0055 Registration No. 058-1211-0392-19, Session..... has successfully completed and submitted his/her dissertation on Study of Circadian Rythm in Human (Daily Eating, Sleeping and Temperature Pattern), as a part of his/her study curriculum. The dissertation is now unfurled for evaluation by the university. We wish him/her all success in his/her endeavours.

Examiner

Department of Zoology
Vijaygarh Jyotish Ray College

EXAMINED
Vijaygarh Jyotish Ray College
Department of Zoology
22/12/22

Head of the Department

Supervisors

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to the Department of Zoology, Vijaygarh Jyotish Ray College, Kolkata; for giving me this Golden opportunity of making this project named *"Circadian Functions in Humans (Daily eating, Sleeping and Temperature Pattern)."*

In this context I would specially like to thank my professors Dr. Pinaki Ranjan Chakroborty, Mrs. Aditi Ghosh and Ms. Ranita Bhattacharya for helping me with this project and being by my side whenever I needed them. Their absolute support has played a major role in completing this project.

Last but not the least, I would like to thank my classmates for cooperating with me to finish the project within the given time period.

This project has helped me a lot to improve my knowledge and skills.

Vijaygarh Jyotish Ray College

ABSTRACT

The circadian rhythm controlled by the SCN (Suprachiasmatic Nucleus) in our hypothalamus plays a major role in regulating our day to day activities (24 hours time period). It manages our behavioural and physiological pattern through manipulating our sleep-wake cycle, hunger cycle along with body temperature scale. Certain hormones like melatonin, cortisol have an impact on the built in clock. Various environmental factors like photoperiod, humidity provide relevant information when recording observations specific to the subject. This in turn helps in providing better knowledge of the functions of the biological rhythm in humans. Phasing out of this circadian rhythm in humans might lead to unwanted consequences like obesity, blood pressure issues etc. Hence, this endogenous rhythm is the most widely studied among all the others and also easy to analyze as these recur within 24 hours. Therefore, the human body is programmed obeying the photoperiodism (synchronizer) and pacemaker, i.e, the circadian rhythm.

Vijaygarh Jyotish Ray College

CONTENT

Vijaygarh Jyotish Ray College

INTRODUCTION

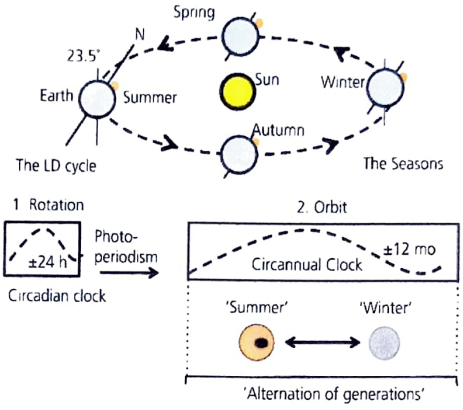
Biological rhythms are self –sustaining natural cycles of animal life history which maintain themselves regardless of the environmental factors. All animals possess innate biological clocks which are driven by the biochemical mechanisms. Most living organisms are exposed to the rhythms of solar system. Rhythmicity is a wonderful phenomenon of nature. Various kinds of rhythms are evident. The term circadian was coined by Franz Halberg in 1959.[15] According to Halberg's original definition: The term "circadian" was derived from circa (about) and dies (day); it may serve to imply that certain physiologic periods are close to 24 hours, if not exactly that length. Herein, "circadian" might be applied to all "24- hour" rhythms, whether or not their periods, individually or on the average, are different from 24 hours, longer or shorter, by a few minutes or hours.[16][17] in the biological world- day_- night cycle, seasonal cycle, moon and tide cycle etc. Animals during the course of evolution have acquired a variety of endogenous rhythms, whose periods are matched with those rhythmic events in the environment. Bunning (1936) was the first biologist to carry out extensive work on biological rhythms.

The various types of biological rhythms are

- ❖ Circadian rhythm.
- ❖ Circaannual Rhythm.
- ❖ Circatidal Rhythm.
- ❖ Circalunar Rhythm.
- ❖ Semilunar Rhythm

Vijaygarh Jyotish Ray College

Circannual Rhythms:



They show one-year periodicity, e.g. a large number of animals reproduce once in a year. Flowering in plants also takes place once a year. Insects and amphibians follow a cycle of hibernation and activity. Hummingbirds in South America move to the caves and become inactive in winter in Andes. Famous migration of Monarch butterflies from North America to Mexico and back follows annual cycle. Millions of these butterflies cover a distance of 3200 km to hibernate on trees in San Francisco. Many beetle species hibernate under the snow in Himalaya. Arctic and Antarctic animals generally follow annual cycles of activity.

Fig. Circannual Rhythm

Circalunar Rhythms:

These rhythms synchronise with the 28 day phases of moon and tidal rhythms. Palolo worm lives in deep sea but swims to surface on the first day of the first quarter of moon in November in Fiji. The sea hare (Aplysia) shows periodicity which is exactly half of the lunar cycle.

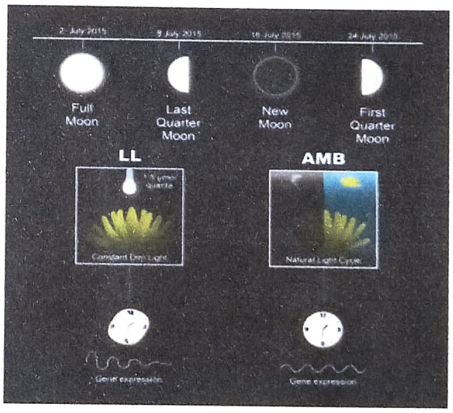


Fig. Circalunar Rhythm

EXAMINED
Vijaygarh Jyotish Ray College
Department of Zoology

Vijaygarh Jyotish Ray College

Circatidal Rhythm:

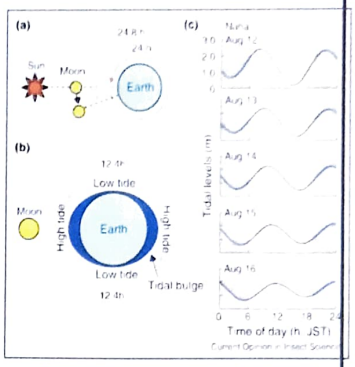


Fig. Circatidal Rhythm

These follow 12.4 or 24.8 hour cycle that is synchronised with low and high tides twice a day. Animals living in burrows, such as polychaetes, planarians, crab etc. are submerged and exposed alternately and in the process get food brought by water currents. Bivalves such as Mytilus showed shell opening rhythm according to circatidal rhythms even when kept in the lab. Grunion fish spawns precisely at high tides.

Semilunar Rhythm:

It is the biological rhythm which are synchronised with the fortnight cycle of spring tide and neap tide.This is also known as circasyzgic rhythm. Periwinkle exhibits such rhythm.

Circadian Rhythm:

The term 'circadian' originated from two Latin words, circa meaning about and dian meaning a day. These rhythms follow 24 hour cycle of activity and sleeping synchronised with light and darkness. So, the animals can be classified as nocturnal, diurnal and crepuscular, the last ones are active at sunrise and sunset. Birds are mostly diurnal and bats nocturnal which find their way by echolocation. Body metabolism and release of hormones are synchronised with 24 hour cycle.

Fig. Circadian Rhythm

In vertebrates, neural connections exist between retina and hypothalamus and pacemaker may be located in ventromedian nucleus of hypothalamus. In amniotes, the

Vijaygarh Jyotish Ray College

pineal and parietal bodies regulate photoperiodism. Melatonin secreted by pineal gland has antigonadotropic effect. Turtles synthesize serotonin during day and melatonin at night. However, this cycle disappears during hibernation.

Circadian rhythm among all other rhythms have been widely studied.

Characters of Circadian Rhythm:

❖ They are genetic in origin.

❖ They are controlled by biological clock.

❖ The rhythm can be reset by exposure to external stimuli (such as light and heat), a process called entrainment. The external stimulus used to entrain a rhythm is called the Zeitgeber, or "time giver". Travel across time zones illustrates the ability of the human biological clock to adjust to the local time; a person will usually experience jet lag before entrainment of their circadian clock has brought it into sync with local time.

❖ The rhythm has an endogenous free-running period that lasts approximately 24 hours. The rhythm persists in constant conditions, (i.e., constant darkness) with a period of about 24 hours. The period of the rhythm in constant conditions is called the freerunning period and is denoted by the Greek letter τ (tau). In diurnal animals (active during daylight hours), in general τ is slightly greater than 24 hours, whereas, in nocturnal animals (active at night), in general τ is shorter than 24 hours.

❖ These rhythms repeat once in a day.

❖ Thees rhythms can be adjusted to match the local time.

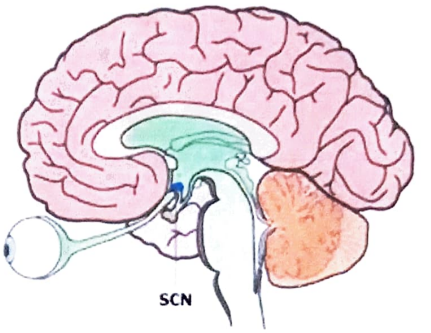
❖ The rhythms exhibit temperature compensation. In other words, they maintain circadian periodicity over a range of physiological temperatures.

Vijaygarh Jyotish Ray College

HUMAN CIRCADIAN RHYTHM

Circadian rhythm is the 24-hour internal clock in our brain that regulates cycles of alertness and sleepiness by responding to light changes in our environment. Our physiology and behavior are shaped by the Earth's rotation around its axis.

The primary circadian clock in humans is located in the suprachiasmatic nucleus (or nuclei) (SCN), a pair of distinct groups of cells located in the hypothalamus. Destruction of the SCN results in the complete absence of a regular sleep–wake rhythm.



Location of SCN

The SCN receives information about illumination through the eyes. The retina of the eye contains "classical" photoreceptors ("rods" and "cones"), which are used for conventional vision. But the retina also contains specialized ganglion cells that are directly photosensitive, and project directly to the SCN, where they help in the entrainment (synchronization) of this master circadian clock. These cells contain the photopigment melanopsin and their signals follow a pathway called the retinohypothalamic tract, leading to the SCN. If cells from the SCN are removed and cultured, they maintain their own rhythm in the absence of external cues.

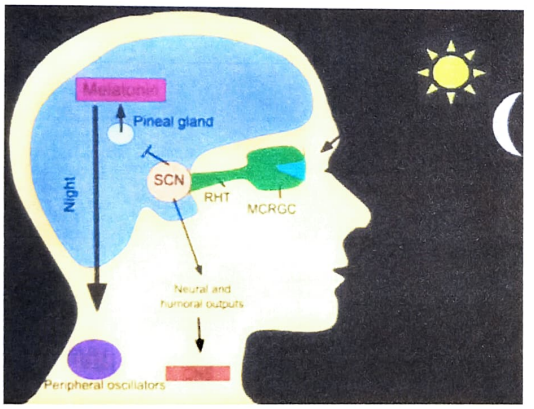


Fig: Role of SCN in Circadian

Vijaygarh Jyotish Ray College

The SCN takes the information on the lengths of the day and night from the retina, interprets it, and passes it on to the pineal gland, a tiny structure shaped like a pine cone and located on the epithalamus. In response, the pineal secretes the hormone melatonin.[80] Secretion of melatonin peaks at night and ebbs during the day and its presence provides information about night-length.

Several studies have indicated that pineal melatonin feeds back on SCN rhythmicity to modulate circadian patterns of activity and other processes. However, the nature and system-level significance of this feedback are unknown.

The circadian rhythms of humans can be entrained to slightly shorter and longer periods than the Earth's 24 hours. Researchers at Harvard have shown that human subjects can at least be entrained to a 23.5-hour cycle and a 24.65-hour cycle (the latter being the natural solar day-night cycle on the planet Mars).

Biological markers and effects

The classic phase markers for measuring the timing of a mammal's circadian rhythm are:

- ❖ melatonin secretion by the pineal gland.
- ❖ core body temperature minimum.
- ❖ plasma level of cortisol.

For temperature studies, subjects must remain awake but calm and semi-reclined in near darkness while their rectal temperatures are taken continuously. Though variation is great among normal chronotypes, the average human adult's temperature reaches its minimum at about 5:00 a.m., about two hours before habitual wake time. Baehr et al found that, in young adults, the daily body temperature minimum occurred at about

Vijaygarh Jyotish Ray College

04:00 (4 a.m.) for morning types but at about 06:00 (6 a.m.) for evening types. This minimum occurred at approximately the middle of the eight-hour sleep period for morning types, but closer to waking in evening types.

Melatonin is absent from the system or undetectably low during daytime. Its onset in dim light, dim-light melatonin onset (DLMO), at roughly 21:00 (9 p.m.) can be measured in the blood or the saliva. Its major metabolite can also be measured in morning urine. Both DLMO and the midpoint (in time) of the presence of the hormone in the blood or saliva have been used as circadian markers. However, newer research indicates that the melatonin offset may be the more reliable marker. Benloucif et al.found that melatonin phase markers were more stable and more highly correlated with the timing of sleep than the core temperature minimum. They found that both sleep offset and melatonin offset are more strongly correlated with phase markers than the onset of sleep. In addition, the declining phase of the melatonin levels is more reliable and stable than the termination of melatonin synthesis.

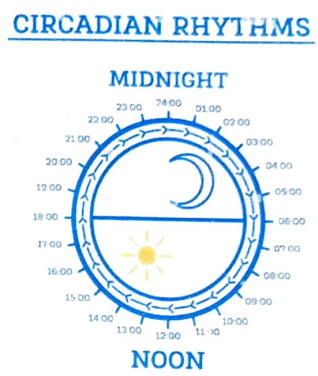


Fig. Sleep Wake Cycle

Other physiological changes that occur according to a circadian rhythm include heart rate and many cellular processes "including oxidative stress, cell metabolism, immune and inflammatory responses, epigenetic modification, hypoxia/hyperoxia response pathways, endoplasmic reticular stress, autophagy, and regulation of the stem cell environment." In a study of young men, it was found that the heart rate reaches its lowest average rate during sleep, and its highest average rate shortly after waking.

More-or-less independent circadian rhythms are found in many organs and cells in the body outside the suprachiasmatic nuclei (SCN), the "master clock". Indeed,

Vijaygarh Jyotish Ray College

neuroscientist Joseph Takahashi and colleagues stated in a 2013 article that "almost every cell in the body contains a circadian clock."For example, these clocks, called peripheral oscillators, have been found in the adrenal gland, oesophagus, lungs, liver, pancreas, spleen, thymus, and skin. There is also some evidence that the olfactory bulb and prostate may experience oscillations, at least when cultured.

Fig. Effect of light on Circadian Rhythm

Though oscillators in the skin respond to light, a systemic influence has not been proven. In addition, many oscillators, such as liver cells, for example, have been shown to respond to inputs other than light, such as feeding.

Light resets the biological clock in accordance with the phase response curve (PRC). Depending on the timing, light can advance or delay the circadian rhythm. Both the PRC and the required illuminance vary from species to species and lower light levels are required to reset the clocks in nocturnal rodents than in humans. Studies have also shown that light has a direct effect on human health because of the way it influences the circadian rhythms.

Timing of medical treatment in coordination with the body clock, chronotherapeutics, may significantly increase efficacy and reduce drug toxicity or adverse reactions.

A number of studies have concluded that a short period of sleep during the day, a power-nap, does not have any measurable effect on normal circadian rhythms but can decrease stress and improve productivity. Health problems can result from a disturbance to the circadian rhythm. Circadian rhythms also play a part in the reticular activating system, which is crucial for maintaining a state of consciousness.

Vijaygarh Jyotish Ray College

There are two types of Circadian Rhythm disorder. They are:

❖ Intrinsic Circadian Rhythm disorder: Delayed Sleep Phase Syndrome (DSPS)

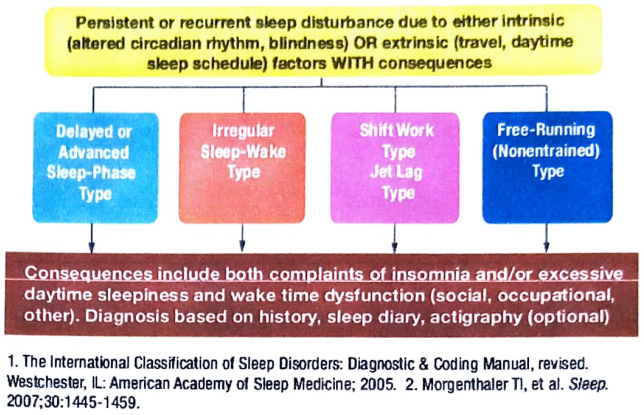
Advanced Sleep Phase Syndrome

(ASPS) Irregular Sleep-Wake Cycle

Non 24 Hours Sleep-Wake Syndrome

❖ Extrinsic Circadian Rhythm: Shift work Time-Zone Change Disorder.

Treatment of Circadian Rhythm Disorder:



1. The International Classification of Sleep Disorders: Diagnostic & Coding Manual, revised. Westchester, IL: American Academy of Sleep Medicine; 2005. 2. Morgenthaler TI, et al. *Sleep.* 2007;30:1445-1459.

Fig. Human Circadian Rhythm

❖ Behaviour Therapy or advice about sleep therapy.

❖ Avoid naps,caffeine and other stimulants.

❖ Bright light therapy.

❖ Blue blocking glass therapy.

❖ Medication such as melatonin and modafinil.

❖ Sleep phase chronotherapy.

❖ Tasemelton has been proven effective in Phase III trail.

Vijaygarh Jyotish Ray College

EXPERIMENTAL METHODOLOGY

A. Requirements

I. Thermometer.

II. Clock.

B. Procedure

I. Body temperature is recorded by thermometer.

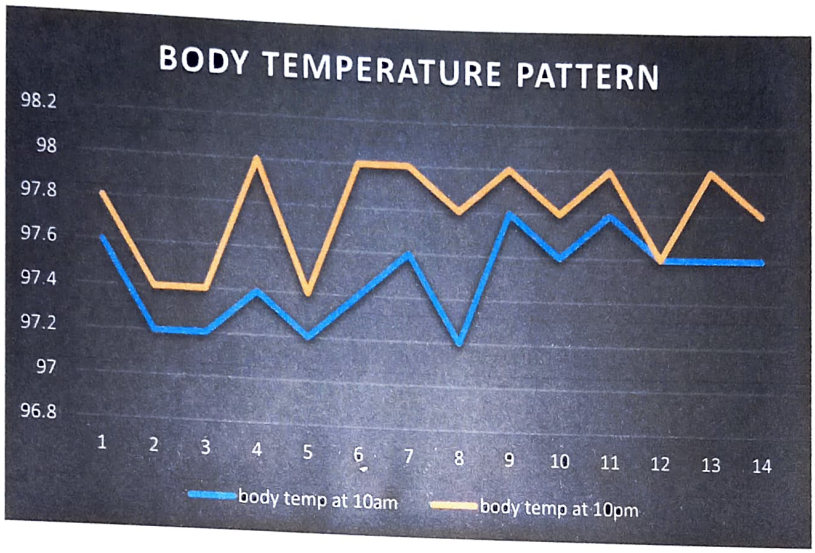
II. Lunch time, dinner time and sleep time are recorded as per eating and sleeping.

OBSERVATION

No. of obs.	Date	Sleep Time	Body Temperature at 10 a.m.	Body Temperature at 10 p.m.	Lunch Time (Hunger)	Dinner Time (Hunger)
1.	01.03.22	12:00	97.6	97.8	2:15	10:30
2.	02.03.22	11:30	97.2	97.4	1:30	10:15
3.	03.03.22	11:48	97.2	97.4	2:30	10:00
4.	04.03.22	1:10	97.4	98	3:00	11:30
5.	05.03.22	1:00	97.2	97.4	2:15	11:00
6.	06.03.22	1:05	97.4	98	3:00	11:30
7.	07.03.22	12:45	97.6	98	2:30	11:00
8.	08.03.22	2:45	97.2	97.8	2:15	11:30
9.	09.03.22	3:00	97.8	98	2:00	11:30
10.	10.03.22	2:15	97.6	97.8	2:15	11:00
11.	11.03.22	2:30	97.8	98	3:00	11:00
12.	12.03.22	3:00	97.6	97.6	2:15	11:30
13.	13.03.22	2:00	97.6	98	3:00	11:00
14.	14.03.22	2:45	97.6	97.8	3:00	11:00

Vijaygarh Jyotish Ray College

ANALYSIS



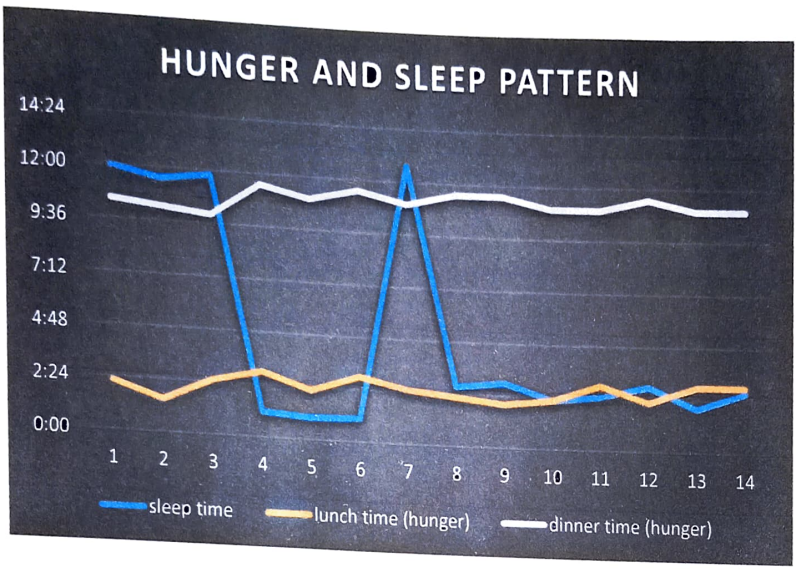
This particular graph demonstrates the Body Temperature at 10 AM and 10 PM of the subject under observation.

X-axis illustrates the Number of days, whereas Y-axis illustrates the Temperature (^{o}F).

Through the following observations and analytical graph, it can be easily stated that body temperature at 10 AM is lower than 10 PM (most of the days). This is due to the nocturnal activeness and alertness leading to high metabolic rates and cortisol level even at night, which in turn delays melatonin secretion. Apart from this the setting in of summer season with its particular duration of photoperiod provides some crucial information to the master clock, SCN. The heat of the summer is also an essential factor which leads to some of the variations in the body temperature.

Vijaygarh Jyotish Ray College

ANALYSIS



This particular graph demonstrates the Hunger and Sleeping pattern of the subject under observation. X-axis illustrates the Number of days, whereas Y-axis illustrates the Time.

Through the following observations and analytical graph, it can be easily deduced that there exists a relationship between the eating, sleeping pattern and photoperiod. According to various studies the sleep-wake cycle is regulated by the melatonin hormone and its secretion increases during night promoting sleepiness in the subject under observation between 11:30 PM to 12:00 AM. As per the sleeping pattern of the subject under observation daily food consumption has a healthy gap of 8-10 hours. The average lunch timings lie between 02:00 PM to 02:15 PM and the average dinner timings lie between 11:00 PM to 11:30 PM.

Vijaygarh Jyotish Ray College

CONCLUSION

From the provided data it is quite evident that the temperature pattern of the subject under observation is altered. This is mainly due to the life style exhibited by the subject. Environmental cues like the natural photoperiod plays a role in Melatonin secretion at night leading to the initiation of the sleep-wake cycle, but due to artificial light exposure after normal hours the melatonin secretion gets delayed. The subject gets habituated to this artificial light exposure and the biological clock also becomes accustomed to it. This also explains the higher 14emperature readings at night rather than mornings, due to rate of metabolic activities being at its peak during the odd hours. This again proves the lunch timings being delayed, i.e, at the late noon. Sleep plays a vital role in regulating some hormone levels, like Leptin and Ghrelin, which are integral to hunger and appetite. Ghrelin is closely related to hunger, while Leptin is tied to feeling full. A lack of sleep triggers increased levels of Ghrelin and decreased levels of Leptin, leading to increasing hunger and appetite, which in turn leads to increased CBT (core body temperature). It is common knowledge that both getting good sleep and following a nutritious diet is indispensable for overall health. A life style like this could contribute to weight gain, indigestion and certain sleep disorders like sleep apnea, insomnia etc. Hence efforts should be made to shift such a life style into a balanced one to ensure a healthy living.

Vijaygarh Jyotish Ray College

REFERENCES

- A Barion, PC Zee - Sleep medicine, 2007 – Elsevier
- TI Morgenthaler, T Lee-Chiong, C Alessi, L Friedman… - Sleep, 2007
- B Bjorvatn, S Pallesen - Sleep medicine reviews, 2009 – Elsevier
- A Germain, DJ Kupfer - Human Psychopharmacology: Clinical …, 2008 - Wiley Online Library
- EK Baehr, W Revelle, CI Eastman - Journal of sleep research, 2000 - Wiley Online Library
- J Arendt - 2000 - Mass Medical Soc
- W Witting, M Mirmiran - Biological Rhythm Research, 1997 - Taylor & Francis
- B Berra, AM Rizzo - Clinics in dermatology, 2009 - Elsevier

Rajyasri Mukherjee

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Effect of Microbial Diversity on Arsenate Reduction Potential in Aquifer Sediments of Bengal Delta Plain

Project report submitted to Department of Microbiology, Vijaygarh Jyotish Ray College in partial fulfillment of Bachelors of Science in Microbiology at University of Calcutta in the year, 2022.

Paper Code: MCB-A-DSE-B-6-4

Roll No: 193058-21-0036

Registration No: 058-1111-0398-19

Under the able guidance of

Dr. Shilajit Barua

Assistant Professor

Department of Microbiology

Vijaygarh Jyotish Ray College

Bejoygarh, Jadavpur

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

Contents

Vijaygarh Jyotish Ray College

1. Abstract

Contamination of groundwater with geogenic arsenic poses a major health risk to millions of people throughout the world. Arsenic in aquifer environment predominantly exists in two different oxidation states: arsenite (AsIII: a more toxic species and mobilizable form) and arsenate (AsV: a lesser toxic and immobilized form). Microbial communities in aquifer sediments has often been associated with release of arsenic from sediments into ground water. Three physiologically different class: iron reducing bacteria, dissimilatory arsenate reducing bacteria (DARB) and iron reducing DARB has been documented responsible for arsenic release from sediments. 28–62% of the 125 million inhabitants of Bangladesh and more than 40 million people in West Bengal are at risk of arsenic poisoning from water abstracted from the subsurface and used for drinking, cooking and irrigation. Long term exposure to arsenic can lead to scaling of the skin, circulatory and nervous system disorders and skin, lung and bladder cancers. Arsenic release from aquifer sediments into aquatic phase as a result of microbial activity has been a topic of extensive research throughout years. A very commonly used detection technique for AsIII to AsV conversion or vice versa is based on differential reaction of either of these species with silver nitrate generating a yellow and brown coloured precipitate for AsIII and AsV respectively. A mixture of AsIII and AsV would generate a specific colour precipitate depending upon the proportion of the two species. In this study, arsenic bioconversion potential of microbial population in aquifer sediment of Bengal Delta Plain was analysed. It exhibited spatial variation (along depth), and found to considerably affected by microbial population diversity in the sediments. Diversity of microbial population was determined by culture independent technique wherein community DNA was isolated directly from sediments, and subjected to ARDRA analysis. More diverse population, as exhibited by more number of restriction fragment bands were observed in sediments with higher arsenate reduction potential.

Keywords: Arsenate, microbial community, silver nitrate precipitation

Vijaygarh Jyotish Ray College

2. Introduction

Arsenic (As), is the most prevalent toxic metalloid of the environment and emerged as a potential threat through geogenic contamination in the lower Gangetic plains of India (Rahman et al., 2005) and Bangladesh (Smith et al., 2000). 28–62% of the 125 million inhabitants of Bangladesh and more than 40 million people in West Bengal are at risk of arsenic poisoning from water abstracted from the subsurface and used for drinking, cooking and irrigation. Long term exposure to arsenic can lead to scaling of the skin, circulatory and nervous system disorders and skin, lung and bladder cancers (Smedley and Kinninberg. 2002). In W. Bengal and Bangladesh where the problem has received most attention, the aquifer sediments are derived from weathered materials from the Himalayas. Arsenic typically occurs in concentrations of 2–100 ppm in these sediments, much of it sorbed onto a variety of mineralogical hosts including hydrated ferric oxides, phyllosilicates and sulfides (Nickson et al., 2000). Microorganisms like metal-reducing bacteria had often been related to arsenic release from soils and sediments (Oremland and Stolz, 2005). Dissmilatory arsenate reduction is carried out by a group of arsenic metabolizing bacteria called dissimilatory arsenate reducing prokaryotes (DARP) (Kruger et al., 2013) which carries out anaerobic respiration by using AsV as terminal electron acceptor. In natural settings, the reductive dissolution of Fe-oxide minerals and reductive mobilization of As(III) are largely mediated by phylogenetically and physiologically diverse prokaryotes that obtain metabolic energy by coupling the reduction of Fe(III) or As(V) to dissolved organic matter or chemoautotrophic electron donors such as sulfide (Stolz and Oremland, 1999; Stolz et al., 2006). Aquifers are one such natural environment DARPs represents to diverse phylogenetic groups such as Firmicutes, Gamma-, Delta- and Epsilonproteobacteria, Aquificae, Deferribacteres, Chryosiogenetes and in the Archaea (Cavalca et al., 2013).

It is now universally recognized that culture-dependent methods such as dilution plating on standard media assess less than 5% of environmental microorganisms (Bakken 1985) while microcosm based studies suffer from several drawbacks like loss of natural refuges (Bourquin et al. 1979), difficult to fill replicably without stressing organisms (Grice et al., 1977), substrate for organisms not natural to ecosystem (Balch et al., 1978), etc. The advent of culture-independent methods has revolutionized microbial ecology because they make it possible to study a much

Vijaygarh Jyotish Ray College

greater fraction of environmental microorganisms. The ribosomal 16S rRNA gene is a phylogenetic marker that has been analyzed extensively within the last decade due to its presence in all microorganisms (Hugenholtz et al., 1998), and due to a combination of variable regions, influenced by the evolutionary clock that allow differentiation of taxa, with conserved regions, for universal priming (Head et al., 1998).

Amplified ribosomal DNA restriction analysis (ARDRA) has been successfully used for assessing the diversity of microbial community in soil or sediments. ARDRA is a DNA fingerprinting technique based on PCR amplification of 16S ribosomal DNA using primers for conserved regions, followed by restriction enzyme digestions and agarose gel electrophoresis (Smit et al., 1997). ARDRA is a rapid, accurate and reliable technique to assess the microbial diversity. The band pattern obtained indicates the structure of the community present in the environmental system (Chandra et al., 2010).

Several studies had indicated that arsenic mobilization from sediments into ground water is a complex interplay between physico-chemical properties and microbial community structure of aquifer sediment ecosystem. We herein had made an attempt to observe the effect of microbial community diversity on arsenate reduction potential of such community in aquifer sediment samples.

3. Materials and Methods

3.1. Collection of Aquifer Sediment Sample

Aquifer sediments were collected from a site at Uttarghugia (23.1128° N, 88.5318° E), Chakdah, Nadia, West Bengal India (Figure 1) by core boring followed by reverse circulatory drilling method (Islam et al., 2004).

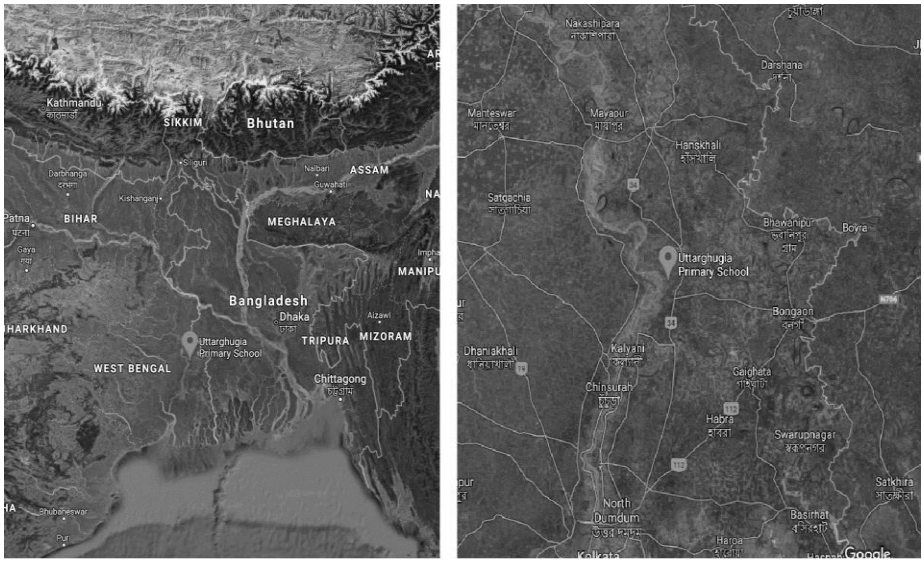


Figure 1: Map of Uttarghugia, Chakdah Block

Vijaygarh Jyotish Ray College

Sediments were obtained at depths of 20 feet, 27 feet, 40 feet and 85 feet from the surface. The sediments were preserved and further handled in glove box (N_2 gas phase) to maintain oxygen free environment.

3.2. **Preparation of Microcosm for enrichment of arsenate reducing microbial community.**

Microcosms were developed in sealed glass vials by inoculating sediment samples in SeFr1 media broth composed of (gL^{-1}) K_2HPO_4: 0.225, KH_2PO_4: 0.225, NaCl: 0.46, $(NH_4)_2SO_4$: 0.225, MgSO4.7H2O: 0.117, $CaCl_2$.2H2O: 0.06, Yeast extract: 0.2, Sterile additions/10 ml: Vitamin stock solution: 0.1 ml, Sodium Acetate: 10 mM. The medium was supplemented with 5mM of arsenic equivalent filter-sterilized Na_2HAsO_4 based on analytical reports of arsenic content in the sediments. The entire preparation was carried out in an anaerobic glove box (N_2 gas phase), and each of the vials was injected with pure nitrogen before sealing. The vials were inoculated at 37°C for 48 hours till the color of the media changed.

3.3. **Analysis of arsenate reduction potential of microbial community in aquifer sediments.**

The ability of the aquifer sediment-associated microbial community to reduce arsenate was measured using a slightly modified (described below) silver nitrate colorimetric assay (Simenova et al., 2004). The contents of each microcosm was centrifuged at 8000g for 10 minutes, pellets were washed in 0.1M Tris-HCl (pH 7.3) twice and again incubated for 48 hours at 32°C in 0.1M Tris-HCl (pH 7.3) amended with 1.33mM arsenate in microcosm vials under N_2 head. Following incubation, the microcosm content was centrifuged at 8000g for 10 minutes and arsenic bioconversion in supernatants were analyzed by reacting with equal volume of sterile 0.1M $AgNO_3$. Differential colour reactions of 0.1M $AgNO_3$ with pure 1.33 mM Arsenate and arsenite in 0.1M Tris-HCl (pH 7.3) served as controls.

3.4. **Community Genomic DNA Isolation and Purification**

Microbial community DNA from the sediments was isolated by freeze-thaw method (Tsai and Olson, 1991). Briefly, 3 g of soil samples were mixed with 6 mL of 100 mM sodium phosphate buffer (pH 8.0) by shaking at 150 rpm for 15 min. The slurry was pelleted by centrifugation at 6000 g for 10 min. The pellet was washed again with phosphate buffer, re-suspended in 4 mL lysis buffer (0.10 M NaCl; 0.1 M disodium EDTA, pH 8.0 and 0.5M Tris, pH 8.0) and 1ml 20% SDS and incubated at 37°C for 15 minutes. Subsequently, 3-5 cycles of freezing in −70 °C (in dry ice-

Vijaygarh Jyotish Ray College

ethanol bath) and thawing at 65 °C in water bath was conducted to release DNA from the microbial cells. 2ml of Tris saturated phenol (pH 8.0) was added, vortexed rigorously and centrifuged at 6000g for 10 minutes. The aqueous phase was collected in fresh tube and equal volume phenol: choloroform: isoamyl alcohol (25:24:1) was added. The mixture was centrifuged at 6000g and the upper aqueous phase was collected in fresh tube. This was followed by addition of 0.6 volume chilled isopropanol, incubated for 1 hour at room temperature and centrifugation was carried out at 12000g for 20 minutes. The supernatant was discarded, pellet was washed in 500µl of chilled ethanol, centrifuged at 12000g for 20 minutes, supernatant was discarded and pellet was air dried. The air drield pellet of DNA was suspended in 40µl TE buffer. Agarose gel electrophoresis of the extracted microbial community DNA was carried out in 1% agarose gel containing 0.5 µg/mL of ethidium bromide. The portion of the agarose gel containing the community genomic DNA bands were excised out, purification was carried out using MN NucleoSpin Gel and PCR Clean-up kit following manufacturers protocol.

3.5. **PCR amplification of partial 16S rRNA gene**

Partial amplification of the 16S rRNA gene was performed with the TaKaRa Dice (TP600) PCR Thermal Cycler (Takara, Japan). The PCR of the 16S rRNA gene sequence from the total soil DNA was conducted in a final volume of 25 µl. The reaction mixture included 20-50 ng of isolated total soil DNA, 2 U taq polymerase (Cat. No. SKU#MME23L, GENEI, India), 1× PCR buffer with 1.5 mM $MgCl_2$, 200 mM each dNTP, and 10 pmol of each primer (Takara, Japan). The primers were chosen to amplify a 977-bp segment of 16S rRNA gene spanning V3-V9 region to construct the first library. In the first library (D16S_pMOS library) construction, forward primer used was 515F (5'-3') GTGCCAGCAGCCGCGGTAA and the reverse primer was 1492R (5'-3') TACGGYTACCTTGTTACGACTT [23]. This pair of primers was chosen to amplify both the bacterial and archaeal 16S rRNA gene sequences in the total soil DNA. Before amplification cycle DNA was denatured for 2 min at 94°C and after amplification an extension step (7 min at 72°C) was performed. The cycling parameters consisted of 28 cycles at: denaturation at 94°C for 30 sec, primer annealing at 45°C for 1 min, extension at 72°C for 1 min. The samples were held at 4°C until separated electrophoretically in a 2% agarose gel in 0.5 × Tris-Borate-EDTA buffers and visualized using ethidium bromide under ultraviolet illumination.

Vijaygarh Jyotish Ray College

3.6. Restriction digestion, ARDRA and construction of Phylogenetic tree.

Precipitation of the PCR products were carried out by sodium-acetate and ethanol. The pellet was resuspended in 20µl of nuclease free water. RFLP was carried out by the following method (Oliveira et al., 2022). 10µl of each PCR product was directly used for restriction enzyme cleavage. The reaction enzyme mixture contained 1x restriction enzyme buffer and 1.25 U of restriction endonuclease. HaeIII (Banglore GENEI) was selected for their specificity for the amplified region of nifH and was used as specified by the manufacturer. The PCR products were digested overnight. Digested DNA samples were analyzed by electrophoresis in a 2% agarose gel. The electrophoresis conditions were 1h at 110 V in 0.5x Tris-borate-EDTA buffer, followed by 30 min of staining in ethidium bromide. Data for the presence or absence of bands were scored in binary format (0–1). Jaccard similarity coefficient was used by DendroUPGMA method (http://genomes.urv.cat/UPGMA/) for construction of dendrograms.

4. Result and Discussions

The Chakdah Block of Nadia district of West Bengal, India is characterized by differentiation of a high-As aquifer upstream of a low-As aquifer, from which pumping for irrigation is done for the past several decades. As in the groundwater from most shallow tube-wells exceeds the both WHO and FAO limits (WHO, 2007, 2008). The arsenic content in sediments collected from Chakdah region ranged between 9 to 14 mg/kg (Bhattacharyya et al., 2010). Microcosm based study of arsenic mobilization from sediments has been frequently reported. However most of these studies correlated role of role of carbonaceous substrate (Héry et al., 2015), iron content (Islam et al., 2004), sulfate reduction (Sun et al., 2016) in sediments and also elucidated the contribution several sediment associated strains in arsenic mobilization from sediments (Paul et al., 2015). In this study, anaerobic microcosms spiked with arsenate (AsV) were set (Figure 2) with aquifer sediments from Chakda, West Bengal and post incubation growth was observed as evident from the turbidity of the microcosms.

Figure 2: Anaerobic Microcosm of aquifer sediments exhibiting growth post incubation

Vijaygarh Jyotish Ray College

Microbial metabolism has been reported to be one of the key factors responsible for arsenic mobilization from sediments into groundwater. Dissimilatory iron reducing prokaryotes (DARP) and iron reducing DARP, are reported to be major players in this regard These two physiologically distinct group as a result of their metabolism, reduces sediment bound As(V) to soluble As(III) and releases it into groundwater (Oremland and Stolz, 2005). Reduction or oxidation of As(V) to As(III) and vice versa under laboratory condition has been successfully detected by reaction with $AgNO_3$ (Krumova et al., 2008). $AgNO_3$ forms a yellow precipitate of Ag_3AsO_3 and reddish brown precipitate of Ag_3AsO_4 with As(III) and As(V) respectively (Svehla, 2008). Herein, standards of 1.33mM As(III) and 1.33mM As(v) were reacted with $AgNO_3$, and yellow and brown colored precipitates were observed (Figure3).

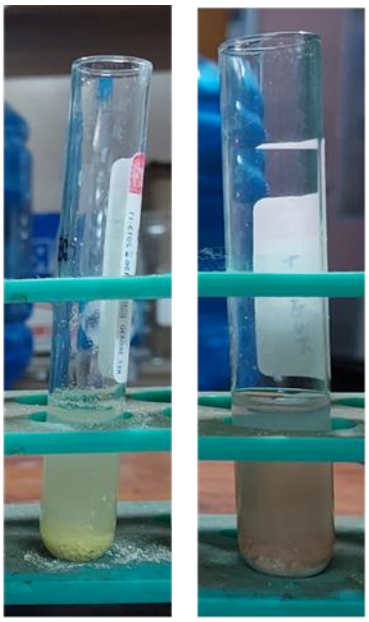


Figure 3: Reaction of As(III) and As(V) with $AgNO_3$

Bioconversion of arsenic by arsenic tolerant bacteria has been determined by reaction with $AgNO_3$, but most of the reports involved pure cultures (Krumova et al., 2008; Dunivin et al., 2018). However, in every ecosystem bioconversion is a complex interplay between different physiological groups of microbes and diversity of arsenic metabolizing community structure and their As redox transforming potential is a key factor in arsenic mobilization from aquifer sediments into groundwater (Paul et al., 2015). Hence, it is much more significant to analyze the As redox conversion potential of aquifer associated microbial community. Considerable difference in arsenic transformation potential of microbial community at various depths has been observed as defined by difference in colour of the

Figure 4: Arsenic transformation by microbial community associated with aquifer sediments of various depths

Vijaygarh Jyotish Ray College

precipitate formed. A more yellowish precipitate formed by the aquifer associated community at a depth of 40 feet indicated higher arsenic reducing potential of the community (Figure 4).

Culture independent molecular analysis of any microbial community in a particular geo environment primarily requires extraction of humic contaminant free community DNA, since humic contaminats are potential inhibitors of PCR amplification (Tsai and Olson, 1998) or restriction digestion (Steffan et al., 1988) of DNA. DNA was successfully isolated from the sediments under study (Figure 5). Brown colored humic contaminants were found to be separated from DNA in the agarose gel. Following purification from agarose gel, community DNA was successfully PCR amplified as evident from obtained desired amplicon size (Figure 6).

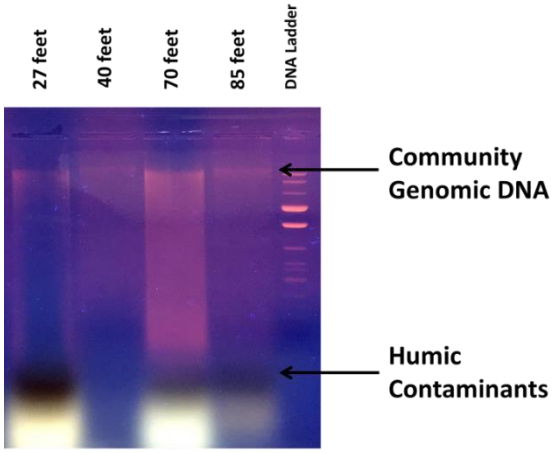


Figure 5: Isolation of community DNA from aquifer sediments at various depths

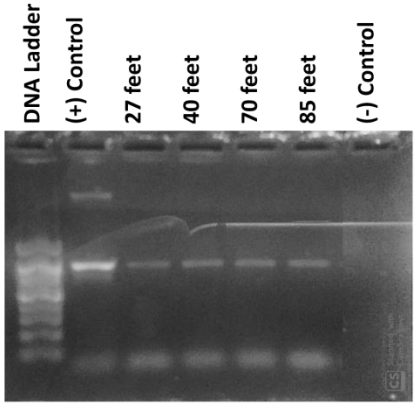


Figure 6: PCR amplification of 16S rDNA gene

Among various approaches for analyzing microbial community structures in a particular ecosystem and in order to infer relationships among the members of the community, comparative analysis of 16S rRNA sequence of microorganisms has been universally applied (Lee et al., 2000). Amplified ribosomal DNA restriction analysis (ARDRA) is a simple method based on restriction endonuclease digestion of the amplified bacterial 16S rDNA (Chandra et al., 2010). This technique has been successfully used to study differences in microbial community structure in sediments in general (Ribeiro, 2013) and aquifer sediments in particular (Haack et al., 2004). Our study clearly indicated differences in composition of the microbial community associated with sediments of various depths (Figure 7). The phylogenetic

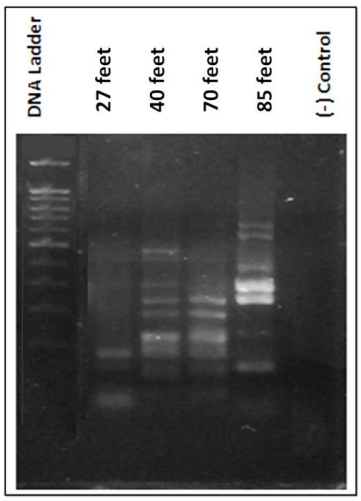


Figure 7: ARDRA pattern of 16S rDNA gene

Vijaygarh Jyotish Ray College

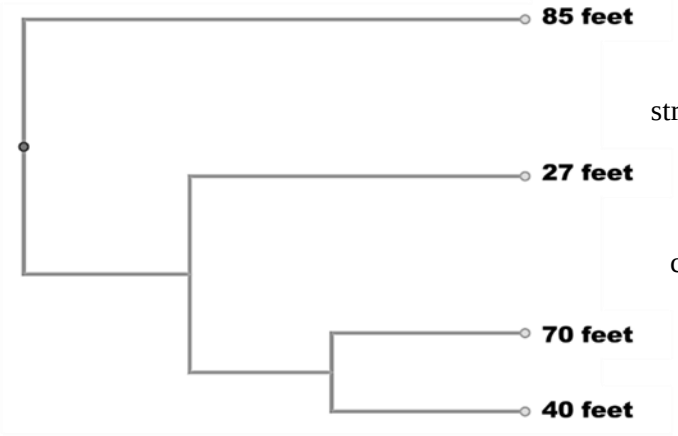


Figure 8: Dendrogram of genetic similarity matrix value of 16S rDNA genotypes analyzed by PCR-ARDRA using enzyme *HaeIII*.

tree (Figure 8) depicts a higher degree of similarity among the microbial community structure associated with 40 feet and 70 feet sediments which inturn was found to exist in a different node when compared to community structures from other depths.

ARDRA pattern of community at a depth of 40 feet exhibited maximum number of restriction fragment bands in compared to other sediment samples under study which indicated presence of much diverse population of that community. Similar study was previously carried out to exhibit gross diversity of copper contaminated soil (Smit et al., 1997) as well as activated sludge (Chandra et al., 2010).

It has been previously reported that a rich diversity of organisms associated with aquifer sediments are potentially able to catalyze a wide range of biogeochemical reactions that could impact both arsenic speciation and solubility (Gnanaprakasam, 2017). Higher Diversity of microbial population of community associated with 40 feet aquifer sediment might be one of the reason for higher arsenic reduction potential associated with such community.

4. Conclusion

Arsenic, a geogenic natural contaminant of ground water is detrimentally affecting millions of people throughout the globe as well as the densely populated Bengal delta plain. Release of arsenic from sediments into adjoining ground water has been previously reported to be a complex interplay of physicochemical, biochemical and microbiological activities in aquifer ecosystems. Herein, attempt has been made to decipher the effect of bacterial diversity on mobilization potential of arsenic from sediment to groundwater, using culture independent molecular techniques. It was grossly found that more complex or diverse population in a community had facilitated arsenic mobilization more than a less diverse community, though detailed study and analysis are yet to be carried out.

Vijaygarh Jyotish Ray College

5. Acknowledgement:

I feel honored to express my deep sense of gratitude to Dr. Shilajit Barua, Assistant professor, Department of Microbiology, Vijaygarh Jyotish Ray College, for his in-depth guidance and support during the entire period of study. I am also grateful to Dr. Rajyasri Neogy, Principal and Prof. Prasenjit Das, HOD, Department of Microbiology, Vijaygarh Jyotish Ray College for providing me necessary permission to carry out this project in the department and common research facility of this esteemed institution. I am indebt to all the faculty members of Department of Microbiology, Vijaygarh Jyotish Ray College for their valuable suggestions. I would like to thank my seniors in the laboratory: Sreosi Chakraborty, Subhankar Barua, Anushree Hait, Gorab Shome and Adrija Banerjee for their constant support. Constant support of our laboratory technicians in the likes of Dilipda, Sushantada and Kabulda is to be acknowledged. Finally, I personally feel that successful completion of this dissertation is not only a scientific accomplishment, but also an achievement of cooperative efforts endeavored by my parents, friends and well wishers.

6. References

1. Bakken, L. R. (1985). Separation and purification of bacteria from soil. Appl. Environ. Microbiol., 49(6), 1482-1487.
2. Balch, W. E., & Wolfe, R. S. (1976). New approach to the cultivation of methanogenic bacteria: 2-mercaptoethanesulfonic acid (HS-CoM)-dependent growth of Methanobacterium ruminantium in a pressureized atmosphere. Appl. Environ. Microbiol., 32(6), 781-791.
3. Bhattacharyya, D., Ray, A. K., Mukherjee, P. K., & Pal, T. (2010). Studies on distribution pattern of arsenic in groundwater and sediments from Nadia and 24-Paraganas (N) districts, West Bengal. Indian Journal of Geosciences, 64(1-4), 91-98.
4. Bourquin, A. W., Garnas, R. L., Pritchard, P. H., Wilkes, F. G., Cripe, C. R., & Rubinstein, N. I. (1979). Interdependent microcosms for the assessment of pollutants in the marine environment. International Journal of Environmental Studies, 13(2), 131-140.
5. Cavalca, L., Corsini, A., Zaccheo, P., Andreoni, V., & Muyzer, G. (2013). Microbial transformations of arsenic: perspectives for biological removal of arsenic from water. Future microbiology, 8(6), 753-768.

6. Chandra, S., Nalapeta, S., Nehra, S., Varshney, A. K., Mathur, N., Trivedi, P. C., & Medicherla, K. M. (2010). The Diversity Analysis of the Microbial Community in Wastewater by Amplified rDNA Restriction Analysis (ARDRA)□. Journal of Ecobiotechnology, 2(4).
7. Dunivin, T. K., Miller, J., & Shade, A. (2018). Taxonomically-linked growth phenotypes during arsenic stress among arsenic resistant bacteria isolated from soils overlying the Centralia coal seam fire. PloS one, 13(1), e0191893.
8. Gnanaprakasam, E. T., Lloyd, J. R., Boothman, C., Ahmed, K. M., Choudhury, I., Bostick, B. C., ... & Mailloux, B. J. (2017). Microbial community structure and arsenic biogeochemistry in two arsenic-impacted aquifers in Bangladesh. MBio, 8(6), e01326-17.
9. Grice, G. D., Reeve, M. R., Koeller, P., & Menzel, D. W. (1977). The use of large volume, transparent, enclosed sea-surface water columns in the study of stress on plankton ecosystems. Helgoländer wissenschaftliche Meeresuntersuchungen, 30(1), 118.
10. Haack, S. K., Fogarty, L. R., West, T. G., Alm, E. W., McGuire, J. T., Long, D. T., ... & Forney, L. J. (2004). Spatial and temporal changes in microbial community structure associated with recharge-influenced chemical gradients in a contaminated aquifer. Environmental Microbiology, 6(5), 438-448.
11. Head, I. M., Saunders, J. R., & Pickup, R. W. (1998). Microbial evolution, diversity, and ecology: a decade of ribosomal RNA analysis of uncultivated microorganisms. Microbial ecology, 35(1), 1-21.
12. Héry, M., Rizoulis, A., Sanguin, H., Cooke, D. A., Pancost, R. D., Polya, D. A., & Lloyd, J. R. (2015). Microbial ecology of arsenic-mobilizing C ambodian sediments: lithological controls uncovered by stable-isotope probing. Environmental microbiology, 17(6), 1857-1869.
13. Hugenholtz, P., Goebel, B. M., & Pace, N. R. (1998). Impact of culture-independent studies on the emerging phylogenetic view of bacterial diversity. Journal of bacteriology, 180(18), 4765-4774.
14. K. Krumova, M. Nikolovska & V. Groudeva (2008) Isolation and Identification of Arsenic-Transforming Bacteria from Arsenic Contaminated Sites in Bulgaria, Biotechnology & Biotechnological Equipment, 22:2, 721-728
15. Kruger, M. C., Bertin, P. N., Heipieper, H. J., & Arsène-Ploetze, F. (2013). Bacterial metabolism of environmental arsenic—mechanisms and biotechnological applications. Applied Microbiology and Biotechnology, 97(9), 3827-3841

Vijaygarh Jyotish Ray College

16. Lee, D. H., Noh, S., & Kim, C. K. (2000). Development of molecular biological methods to analyze bacterial species diversity in freshwater and soil ecosystems. Journal of Microbiology, 38(1), 11-17.
17. Nickson, R. T., McArthur, J. M., Ravenscroft, P., Burgess, W. G., & Ahmed, K. M. (2000). Mechanism of arsenic release to groundwater, Bangladesh and West Bengal. Applied Geochemistry, 15(4), 403-413.
18. Oliveira, J. T., Pereira, A., Souza, A. J., Kuklinsky-Sobral, J. Ú. L. I. A., Freire, F. J., Santos, M. V. D., & Lira, M. D. A. (2022). Inoculation with plant-growth promoting bacteria improves seed germination and initial development of Brachiaria decumbens. Anais da Academia Brasileira de Ciências, 94.
19. Oremland, R. S., & Stolz, J. F. (2005). Arsenic, microbes and contaminated aquifers. Trends in microbiology, 13(2), 45-49.
20. Paul, D., Kazy, S. K., Gupta, A. K., Pal, T., & Sar, P. (2015). Diversity, metabolic properties and arsenic mobilization potential of indigenous bacteria in arsenic contaminated groundwater of West Bengal, India. PloS one, 10(3), e0118735.
21. Rahman, M. M., Sengupta, M. K., Ahamed, S., Chowdhury, U. K., Hossain, M. A., Das, B., ... & Barua, A. K. (2005). The magnitude of arsenic contamination in groundwater and its health effects to the inhabitants of the Jalangi—one of the 85 arsenic affected blocks in West Bengal, India. Science of the Total Environment, 338(3), 189-200.
22. Ribeiro, C. G., Steffens, M. B. R., Etto, R. M., Galvão, C. W., Martins, C. D. C., Pedrosa, F. D. O., & Kolm, H. E. (2013). Ardra profiles of bacteria and archaea in mangrove sediments with different levels of contamination in the estuarine complex of Paranaguá, Brazil. Brazilian Archives of Biology and Technology, 56, 275-281.
23. Simeonova, D. D., Lièvremont, D., Lagarde, F., Muller, D. A., Groudeva, V. I., & Lett, M. C. (2004). Microplate screening assay for the detection of arsenite-oxidizing and arsenate-reducing bacteria. FEMS Microbiology Letters, 237(2), 249-253.
24. Smedley, P. L., & Kinniburgh, D. G. (2002). A review of the source, behaviour and distribution of arsenic in natural waters. Applied geochemistry, 17(5), 517-568.
25. Smit, E., Leeflang, P., & Wernars, K. (1997). Detection of shifts in microbial community structure and diversity in soil caused by copper contamination using amplified ribosomal DNA restriction analysis. FEMS microbiology ecology, 23(3), 249-261.

Vijaygarh Jyotish Ray College

26. Smith, A. H., Lingas, E. O., & Rahman, M. (2000). Contamination of drinking-water by arsenic in Bangladesh: a public health emergency. Bulletin of the World Health Organization, 78, 1093-1103.
27. Steffan, R. J., Goksøyr, J., Bej, A. K., & Atlas, R. M. (1988). Recovery of DNA from soils and sediments. Applied and environmental microbiology, 54(12), 2908-2915.
28. Stolz, J. F., & Oremland, R. S. (1999). Bacterial respiration of arsenic and selenium. FEMS microbiology reviews, 23(5), 615-627.
29. Stolz, J. F., Basu, P., Santini, J. M., & Oremland, R. S. (2006). Arsenic and selenium in microbial metabolism. Annu. Rev. Microbiol., 60, 107-130.
30. Sun, J., Quicksall, A. N., Chillrud, S. N., Mailloux, B. J., & Bostick, B. C. (2016). Arsenic mobilization from sediments in microcosms under sulfate reduction. Chemosphere, 153, 254-261.
31. Svehla, G. (2008). Vogel's qualitative inorganic analysis, 7/e. Pearson Education India. pp 92-94
32. Tsai, Y. L., & Olson, B. H. (1992). Detection of low numbers of bacterial cells in soils and sediments by polymerase chain reaction. Applied and environmental microbiology, 58(2), 754-757.

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

UNIVERSITY OF CALCUTTA

B.SC SEMESTER VI HONOURS EXAMINATION, 2022

PAPER: DSEB4

ROLL No: 193058-21-0027

REGISTRATION No: 058-1111-0323-19

SESSION: 2019-2022

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Isolation of α-amylase producing soil microorganisms from Vijaygarh Jyotish Ray College campus and partial biochemical characterization of the α-amylase enzyme

Dipayan Chatterjee,

Student of Vijaygarh Jyotish Ray College, 6th Semester, Department of Microbiology
Email Id: dipayanchatterjee53@gmail.com

ABSTRACT

Alpha-Amylase is one of the most important industrial enzymes and dominates approximately 25% of the world's enzyme market. Amylases hydrolyze the starch molecule into glucose, maltose, and maltotriose units. The potential application of amylases in a wide range of industrial processes e.g. food, fermentation, textile, and pharmaceutical. Amylases can be obtained from microorganisms, plants and animals. Nowadays, microbial amylases are available commercially and they are almost replacing chemically produced amylases. Microbes (fungi, yeasts, bacteria) are easy to manipulate to obtain required enzyme characteristics and it is very cheaper for bulk production. The selection of the right organisms is a key role in the production of alpha-amylases and developing a new strain of microbe for more production for industrial purposes using cheap nitrogen and carbon source is a continuous process in industrial development. Having great importance of bacterial alpha-amylases in food, textile, fermentation, and paper industry; isolation and manipulation of pure culture of starch degrading organisms from soil has great importance in the biotechnology field. Our aim of this study was to isolate the soil bacteria strain that can produce alpha-amylases and subsequent extraction and purification. The soil sample was collected from the college garden. Alpha-amylase is an extracellular enzyme so centrifuge the culture and discarded the pallet and collect the enzyme and study all the physical and chemical properties.

Keywords: Amylases, industrial processes, Microbes, biotechnology.

INTRODUCTION

Nowadays, using microorganisms in heavy metal absorption, gene engineering, digestion, and production of anti-microbial agents and more importantly, enzyme production on an industrial scale is more acceptable than the chemical methods that need harsh conditions such as high pressure, and high temperature. There are three types of amylases are identified such as α-amylase, β-amylase, and γ-amylase [1].α-Amylases(E.C.3.2.1.1) is the enzyme, that catalyzes the hydrolysis of alpha 1-4 glycosidase linkage of starch and breaks it into low molecular weight compounds such as glucose, maltose, and maltotriose units. Amylase is the most important enzyme and it has a great significance in the industry [2].

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

2022

PROFORMA FOR SUBMISSION OF PROJECT PROPOSALS FOR THE FULLFILLMENT OF THE TWO-YEAR M.Sc DEGREE IN MICROBIOLOGY (CBCS) UNDER THE UNIVERSITY OF CALCUTTA

Title

A STUDY ON INTERACTION OF ANTIBIOTIC RESISTANT BACTERIA AND GUT COMMENSALS IN MURINE MODEL.

Submitted by:

DEBAYAN SAHA

Registration No.: 146-1122-0089-16

Roll No.: 058/MCB/201034

Rajyasri Ray

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

VIJAYGARH JYOTIS RAY COLLEGE

Human Population explosion and its probable impact on the planet.

মানব জনসংখ্যার বিস্ফোরণ এবং গ্রহে সম্ভাব্য প্রভাব :-

NAME :- MAMONI HALDAR

ROLL NO :- 20210859

SUBJECT :- ENVS

PAPER :-

SEMESTER :- 2nd (B.A GENERAL)

C.U ROLL NO :- 212058-12-0195

C.U REGISTRATION NO :- 058-1212-0927-21

CONTACTS :- 7603053759

Rajyasri Moitra

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

মানব জনসংখ্যার বিস্ফোরণ এবং তাদের এর সম্ভাব্য প্রভাব:—

ভূমিকা: যেকোনো দেশের জন্মহার, মৃত্যুহারকে অতিক্রম করলে জনসংখ্যা বৃদ্ধি পায়। পৃথিবীর প্রতিটি দেশে জনসংখ্যা জ্যামিতিক হারে বৃদ্ধি পায়।

কোনো ভৌগোলিক ক্ষেত্রে বসবাসকারী মোট জনসংখ্যা এবং ওই স্থানের মোট জমির আয়তনের অনুপাতকে জনঘনত্ব বলে।

$$\text{জনসংখ্যার ঘনত্ব} = \frac{\text{মোট জনসংখ্যা}}{\text{মোট জমির পরিমাণ}}$$

কোনো দেশের ব্যবহারযোগ্য জমির উপর জনসংখ্যার চাপ নির্ধারণের জন্য মানুষ - জমির অনুপাত সূচক ব্যবহার করা হয়। —

$$\text{মানুষ - জমির অনুপাত} = \frac{\text{মোট জনসংখ্যা}}{\text{মোট কার্যকর জমির আয়তন}}$$

উন্নত দেশগুলিতে জনসংখ্যা বৃদ্ধির হার মাত্র 1%।
হিউম্যান পপুলেশন সম্পর্কিত অধ্যয়ন হল ডেমোগ্রাফি, জনসংখ্যার সম্পূর্ণ গণনাকে সেনসাস বলে।

Vijaygarh Jyotish Ray College

* **বিভিন্ন দেশে জনসংখ্যার তারতম্য:-** বিভিন্ন কারণে পৃথিবীর বিভিন্ন দেশে সমভাবে জনসংখ্যার বন্টন হয় না, জনসংখ্যার ভিত্তিতে পৃথিবীকে পাঁচটি অঞ্চলে ভাগ করা যায়, —

(a) অতি নিবিড় বসতিযুক্ত অঞ্চল: প্রতি বর্গকিমিতে 100 জনের বেশি জনসংখ্যাযুক্ত অঞ্চল, পূর্ব এশিয়ার চিন, জাপান, কোরিয়া, ভিয়েতনাম, ফিলিপাইনস, দক্ষিণ এশিয়ার ভারত, বাংলাদেশ, পাকিস্থান, মিশরের নীলনদ অঞ্চলগুলি কৃষিকাজের সুবিধার জন্য, ফ্রান্স, জার্মানি, বেলজিয়াম, ইউক্রেন প্রভৃতি ইউরোপের দেশগুলি শিল্প ও কৃষির কারণে; উত্তর আমেরিকার পূর্বভাগ শিল্প ও ব্যাবসা বানিজ্যের কারণে অতিনিবিড় বসতিযুক্ত অঞ্চল।

(b) নিবিড় বসতিযুক্ত অঞ্চল:- প্রতি বর্গকিমিতে 40 –100 জন। মায়ানমার, থাইল্যান্ড, ইটালি, স্পেন, রাশিয়া ইত্যাদি দেশগুলিতে কৃষি, খনি ও শিল্পের কারণে এইরূপ নিবিড় বসতিযুক্ত অঞ্চল হয়েছে।

(c) মাঝারি বসতিযুক্ত অঞ্চল:- প্রতি বর্গকিমিতে 10-40 জন। ভারতের মধ্য ও পশ্চিম অঞ্চলের মালভূমি, আফ্রিকার উপকূলবর্তী দেশসমূহ, দক্ষিন আমেরিকার আর্জেন্টিনা, ব্রাজিল, চিলি, অস্ট্রেলিয়াতে এইরূপ বসতি দেখা যায়, কৃষিকাজ ও খনিজ সম্পদের উপর নির্ভর করে অধিবাসীরা।

Vijaygarh Jyotish Ray College

(d) স্বল্প বসতি যুক্ত অঞ্চল :- প্রতি বর্গকিমিতে 1-10 জন, পৃথিবীর বিস্তীর্ণ তৃনভূমি অঞ্চলে, স্বল্প বৃষ্টিপাতের কারনে। পশুপালন ও সাধারন কৃষিকাজের ওপর ভিত্তি করে প্রেইরি, পম্পাস, ভেল্ড, ইউরোশিয়ার স্টেপস, অস্ট্রেলিয়ার আউন্স প্রভৃতি অঞ্চলে এইরূপ বসতি দেখা যায়।

(e) জনবিরল অঞ্চল :- উষ্ণ মরু অঞ্চল, বরফে আচ্ছাদিত অঞ্চল, তৈগা ও সেলভা অঞ্চলে বসবাসের ও কাজের সুযোগের না থাকায় অঞ্চলগুলিতে প্রতি বর্গকিমিতে 1 জনেরও কম লোক বাস করে। সাহারা, আরবিয়া, গোবি, থর, উচ্চ পার্বত্য অঞ্চল বাকি, তাদ্রিক ইত্যাদি এইরূপ অঞ্চল। যেমনো খনি এর প্রাকৃতিক সম্পদ অনুপস্থিত সার্বিক একটি নির্দিষ্ট প্রাণিপালন করতে পারি। কোন জনসংখ্যার তুলনায় জনসংখ্যার আপেক্ষিক জনসংখ্যার বৃদ্ধি বলা যায়।

* জমির বহন ক্ষমতা : জমির বহন ক্ষমতা ও কাম্য জনসংখ্যার তত্ত্ব থেকে যে-কোনো দেশে একটি নির্দিষ্ট জনসংখ্যা সেই দেশের সামাজিক, অর্থনৈতিক ও পরিবেশের উন্নতির সহায়ক হতে পারে আবার ঐ একই জনসংখ্যা অন্য দেশের পক্ষে উন্নতির প্রতিবন্ধক হতে পারে।

Vijaygarh Jyotish Ray College

* পরিবেশ ও উন্নয়নের ওপর জনসংখ্যা বৃদ্ধির অনুকূল প্রভাব :-

(i) জনসংখ্যা বৃদ্ধি আর্থিক ও শ্রমের জোগান দিয়ে সম্পদ আহরণে ও উৎপাদনে সাহায্য করে।

(ii) জনসংখ্যার বৃদ্ধির ফলে বাজারের আয়তন বৃদ্ধি পায়।

(iii) দেশের মূলধনের জোগান বাড়ে।

(iv) দেশে অর্থনৈতিকভাবে উৎপাদনশীল ও সামাজিক ভাবে দায়িত্বশীল জনফলের সংখ্যা বৃদ্ধি পায়।

* পরিবেশ ও উন্নয়নের ওপর জনসংখ্যা বৃদ্ধির প্রতিকূল প্রভাব :-

(i) খাদ্যের উৎপাদন বৃদ্ধি গাণিতিক হারে হলেও জনসংখ্যা বৃদ্ধি পায় গুণোত্তর হারে, এর ফলে সমাজে খাদ্যের অভাব, অপুষ্টি, অনাহার দেখা দেয়। এগুলি দেশের উন্নয়নের প্রতিবন্ধক।

(ii) মোট উৎপাদনের হার জনসংখ্যা বৃদ্ধির হারের চেয়ে কম হলে দেশের জনফলের মাথাপিছু আয় ক্রমে ক্রমে হ্রাস পায়। এর ফলে দারিদ্র্য দেখা যায়।

Vijaygarh Jyotish Ray College

(iii) দারিদ্র্য ও অপুষ্টি, অকাল বার্ধক্য ও অকাল মৃত্যু এবং শিশুমৃত্যুর কারন হয়ে দাঁড়ায়, স্বাস্থ্যহীন জনগন দেশের ও সমাজ ও অর্থনৈতিক উন্নয়নের প্রতিবন্ধক।

(iv) অনিয়ন্ত্রিত জনসংখ্যা বৃদ্ধি পরিবেশে প্রভাব ফেলে সেই সঙ্গে দেশের জনসাধারনের জীবনযাত্রার মানের অবনতি ঘটায়। অধিক ফসল উৎপাদনের প্রয়োজনে রাসায়নিক সার ও কীটনাশক ব্যবহৃত হয় ফলে জল, মাটি ও বায়ুদূষণ ঘটে।

(v) দেশের জনসাধারনের খাদ্য, বস্ত্র, চিকিৎসা, বাসস্থান, শিক্ষাখাতে ব্যয় বৃদ্ধি পাওয়ায় বিনিয়োগ ও মূলধন গঠনের হার হ্রাস পায়।

(vi) মানুষ ও জমির অনুপাতের হার প্রতিকূল হওয়ায় ক্রমহ্রাসমান উৎপাদনবিধি কাজ করে।

(vii) জনসংখ্যা বৃদ্ধি দেশের বেকারত্ব এবং কৃষিক্ষেত্রে ছদ্মবেকারত্ব দেখা দেয়।

(viii) বৈদেশিক ঋণের বোঝা জনগনের উপর কুপ্রভাব ফেলে। জনগন সামাজিক ও অর্থনৈতিক ভাবে পিছিয়ে পড়ে।

(ix) জনসংখ্যার বৃদ্ধি পরিবেশের অবনমন ঘটায়, নানা প্রকার রোগজীবাণু দেখা দেয়। চিকিৎসাক্ষেত্রে পরিষেবার ঘাটতি দেখা যায়।

Vijaygarh Jyotish Ray College

বহুকোটি দেশের জনসংখ্যা

মহাদেশ / দেশ	জনসংখ্যা (10 লক্ষ)	জনবসতি ঘনত্ব
1. এশিয়া মহাদেশ	3720.73	119
1. চিন	1275.11	143
2. ভারত	1027.01	324
3. ইন্দোনেশিয়া	23.27	70
4. বাংলাদেশ	137.44	850
2. আফ্রিকা মহাদেশ	812.60	28
1. মিশর	67.88	71
2. সুদান	29.90	12
3. ইথিওপিয়া	62.91	51
3. ইউরোপ মহাদেশ	726.32	31
1. যুক্তরাজ্য	58.79	243
2. ফ্রান্স	58.74	109
3. জার্মানি	82.02	230
4. উত্তর আমেরিকা	526.52	26
1. ব্রাজিল	166.80	20
2. আর্জেন্টিনা	37.03	13
5. দক্ষিন আমেরিকা	347.11	19
1. আমেরিকা যুক্তরাষ্ট্র	281.42	31
2. কানাডা	30.76	3
6. অস্ট্রেলিয়া	30.9	4

Vijaygarh Jyotish Ray College

জনবিস্ফোরন ও পরিবার পরিকল্পনা

অনুন্নত ও উন্নয়নশীল দেশগুলিতে জনসংখ্যা বৃদ্ধির হার উন্নত দেশের তুলনায় অনেক বেশি। প্রতি 15 সেকেন্ডে 100 টি শিশুর জন্ম হয়। বৃদ্ধির এই হার বজায় থাকলে 2050 সালে ভারতের জনসংখ্যা 1.53 বিলিয়নের চেয়েও বেশি হবে। মনে রাখতে হবে অনুন্নত ও উন্নয়নশীল দেশগুলিতে জনাধিক্যের সামগ্রিক ফল হল দারিদ্র্যের চাপ। অনুন্নত ও উন্নয়নশীল দেশগুলিতে বিশ্বব্যাঙ্কের রিপোর্ট অনুযায়ী (i) 88 কোটি মানুষ কোনো চিকিৎসা পায় না, (ii) 85 কোটি মানুষ নিরক্ষর (iii) 260 কোটি বেশি মানুষ প্রয়োজনীয় স্বাস্থ্য পায় না।

- গত আট বছরে ভারতের জনসংখ্যা বৃদ্ধির হার :-

বছর	মোট জনসংখ্যা	শতকরা বৃদ্ধি
1951	36,10,88,090 জন	(+) 13.3
1961	43,92,34,771 জন	(+) 21.5
1971	54,81,59,652 জন	(+) 24.8
1981	68,33,29,097 জন	(+) 24.7
1991	84,43,24,222 জন	(+) 23.8
2001	102,70,15,247 জন	(+) 20.9
2011	1,21,01,93,422 জন	(+) 17.64

Vijaygarh Jyotish Ray College

* জনসংখ্যা বৃদ্ধির কারন :- (1) যথাযথ শিক্ষার অভাব, দারিদ্র্য, কিছু কিছু ধর্মীয় প্রভাব, কম বয়সে বিবাহ, বহু বিবাহ, পরিবার পরিকল্পনার অভাবের কারনে জনবিস্ফোরন ঘটে।

(2) ভারতীয় মেয়েদের বয়ঃসন্ধিকাল 12-14 বছর হওয়ায় প্রজনন কাল দীর্ঘ হয়। এর ফলে অধিক সন্তানের জন্ম হতে পারে।

(3) সামাজিক প্রথা ও অন্ধবিশ্বাস, পুত্র সন্তানের আশায় অধিক সন্তান লাভ, একাধিক স্ত্রী গ্রহন, সন্তান ভগবান প্রদত্ত তাই নিয়ন্ত্রন না করার প্রবনতা ইত্যাদি।

(4) চিকিৎসা শাস্ত্রের উন্নতির ফলে গড় আয়ু বৃদ্ধি, শিশুমৃত্যু হার কম হওয়ার কারনে জনসংখ্যা বৃদ্ধি ঘটে।

(5) প্রতিষেধক ব্যবস্থা উন্নত হওয়ায় মহামারির প্রকোপ হ্রাস পেয়েছে। তাছাড়া প্রাকৃতিক দুর্যোগের ক্ষেত্রে আগাম সতর্কবার্তা পাওয়ায় জীবনহানি কম হওয়ায় জনসংখ্যা বৃদ্ধি হয়।

(6) খাদ্য সচেতনতা বৃদ্ধি ও প্রয়োজনভিত্তিক খাদ্য সরবরাহের কারনে জনসংখ্যা বৃদ্ধি ঘটে।

Vijaygarh Jyotish Ray College

পরিবার কল্যাণ মূলক প্রকল্প :-

(1) জনসংখ্যা নিয়ন্ত্রণ পদ্ধতি :- পরিবার পরিকল্পনার মাধ্যমে জনসংখ্যা নিয়ন্ত্রণের প্রচার করায়, ভারতে যে জাতীয় জনসংখ্যা নীতি গ্রহণ করা হয়েছে, নিম্নলিখিত পদ্ধতি গুলি বলা —

(i) শিশু মাতার মৌন মিলনের ব্যবস্থা গ্রহণ করে বিভিন্ন আইন প্রবর্তনের ব্যবস্থা করা হয়েছে, 18 বছরের কম বয়সী মেয়েদের 21 বছরের কম বয়সী ছেলেদের বিবাহ নিষিদ্ধ।

(ii) পরিবার পরিকল্পনা গ্রহণের মাধ্যমে জন্মনিরোধক নানা ব্যবস্থা গ্রহণ করা হয়েছে।

(a) রবার নির্মিত জন্মনিরোধক :- পুরুষদের Condom এবং মেয়েদের Diaphragm ব্যবহারের ফলে মিলনে অনিচ্ছা সন্তান হতে পারে না, কিন্তু ফলে গর্ভ অস্বীকার হয় না।

(b) হরমোনঘটিত বড়ি :- ইস্ট্রোজেন ও প্রোজেস্টেরন নামক দুটি হরমোন দিয়ে তৈরি বড়ি ব্যবহারের ফলে 100% সন্তান লাভে অসুবিধা। মেয়েরা এই বড়ি গ্রহণ করে।

(c) শুক্রাণুনাশক পদার্থ :- নানা প্রকার শুক্রাণুনাশক পদার্থ যেমন ক্রীম, কোকোবাটারে পাওয়া যায়। মৌন মিলনে পূর্বে যোনীর অংশে ব্যবহার করলে গর্ভ নিরোধক করা সম্ভব।

(d) অন্তঃ করণমূলক নিরোধক ব্যবস্থা :- রবার বা প্লাস্টিক নির্মিত লুপ, কপার, S আকৃতি নিরোধক ব্যবস্থা জরায়ুর মধ্যে স্থাপন করে গর্ভনিরোধক করা সম্ভব।

Vijaygarh Jyotish Ray College

(ঙ) বন্ধ্যাত্বকরণ ঃ- পুরুষের ক্ষেত্রে ভ্যাসেকটমি পদ্ধতিতে শুক্রাণুবহনকারী নালী ভেসডিফারেন্স কেটে এবং মেয়েদের ক্ষেত্রে টিউবেকটমি বা লাইগেশন পদ্ধতিতে ফ্যালোপিয়ান নালী কেটে ডিম্বাণুর চলার পথ বন্ধ করে জন্ম নিয়ন্ত্রণ করা সম্ভব।

৪) জীবনযাত্রার মানের উন্নতি ঃ—

i) কৃষিকাজে আধুনিক প্রযুক্তির প্রয়োগ।
ii) নারী শিক্ষা ও নারী বিকাশ ঘটানো।
iii) অর্থনৈতিক ও রাজনৈতিক ব্যবস্থার উন্নতি।
iv) এগ্রিকালচার, মৎস্য চাষ, পোলট্রি ইত্যাদি উন্নতিসাধন।
v) অপ্রচলিত শক্তি উৎপাদন।
vi) জৈব সার ও জৈব কীটনাশক ব্যবহার।
vii) স্বাস্থ্য, শিক্ষা ও পরিবহন ব্যবস্থার উন্নতি।
viii) দূষণ রোধ।
ix) দারিদ্র দূরীকরণ প্রভৃতি কর্মসূচীর মাধ্যমে পরিবারের কল্যাণ সম্ভব।

Vijaygarh Jyotish Ray College

*** নগরায়ন ও বাস্তুহারা মানুষ :-** উন্নয়ন প্রকল্পের লক্ষ লক্ষ মানুষ বাস্তুহারা হন। 1950 থেকে 1990 সাল পর্যন্ত মোট 1 কোটি 64 লক্ষ বাস্তুহারা মানুষের মধ্যে 25% মানুষ পুনর্বাসন পেয়েছিল। মোট 63 লক্ষ 21 হাজার আদিবাসীর মধ্যে 15 লক্ষ 61 হাজার জন পুনর্বাসন পেয়েছেন। উন্নত দেশগুলিতে মোট জনসংখ্যার 75 ভাগ মানুষ শহরে বাস করে। উন্নয়নশীল দেশগুলিতে 45-50 শতাংশ মানুষ শহরে বা নগরে বাস করে। কিন্তু এই সমস্যা ক্রমশ বৃদ্ধি পাওয়ার বিরূপ প্রতিক্রিয়া সৃষ্টি হয়েছে।

*** সামাজিক জীবনে প্রভাব :-** নগরায়নের ফলে বাস্তুহারা মানুষদের সামাজিক ও পারিবারিক অবস্থা বদলে যায়। দীর্ঘকালের সম্পর্ক ছেড়ে নতুন বসতি গড়ে ওঠে, পরিচিত মানুষের সাথে চিরকালীন বিচ্ছেদ ঘটে। সমাজ জীবনে এর প্রভাব পড়ে। খেতমজুরদের কাজ জোটে না। চাষ জমি বা বনের উপরে বসবাসকারী আদিবাসীদের উচ্ছেদ হতে হয়। কৃষক নিজের চেনা পরিবেশ হারিয়ে শিল্প শ্রমিকে বা ছোটো ব্যবসায়ীতে পরিণত হয়।

*** পরিবেশের উপর প্রভাব :-** নগরায়নের কারণে প্রাকৃতিক পরিবেশের নানা পরিবর্তন আসে, অরণ্য ধ্বংস করে নগরায়ন হয় ও বাস্তুচ্যুত মানুষদের নতুন কলোনির তৈরির জন্য পরিবেশ অপ্রত্যাশিত হয়। বন্যা রোধ, জলাধার আর ব্রিজ তৈরি করতে গিয়ে বিশাল অঞ্চল জলমগ্ন হয় অরণ্য ধ্বংস হয়।

* অর্থনৈতিক উন্নয়ন ও নগরায়নের এক অপ্রত্যাশিত যখন তখন কাঠি, জ্বালানি, খনিজ পদার্থের বৃদ্ধি, এটা নিয়ন্ত্রণ করাকে সমাধানে পরিণত করাতে না পারলে পরিবেশের ভবিষ্যৎ অন্ধকার, পরিবহন জনিত দূষণ, ধোঁয়া, বর্জ্য, তেল ও কারখানার বর্জ্য পরিবেশকে এতই [illegible] আমাদের দিন এক বড় সমস্যা।

Vijaygarh Jyotish Ray College

বাস্তুহারা জনগণের পুনর্বাসন ও পুনস্থাপনের সমস্যা :-

মানব সভ্যতার বিকাশে প্রারম্ভিক পর্ব ছিল কৃষিভিত্তিক ও নদী কেন্দ্রিক, নদী কেন্দ্রিক সভ্যতায় জনসংখ্যা বৃদ্ধি ও শিল্পায়নের ফলে নতুন নতুন শিল্প কেন্দ্রিক ও কর্মকেন্দ্রিক বাসস্থান নির্মাণের প্রয়োজন হয়ে ওঠে নগর. নগরে বসবাসকারী মানুষের চাহিদা পূরণ, সুযোগ সুবিধার বিষয়গুলি কে একত্রে নগরায়ন বলা হয়।

জীবন ধারণের দীর্ঘমেয়াদী ধারা(?), বিজ্ঞানের আশীর্বাদে(?) নিয়ে এগিয়ে যাওয়া কে বলে উন্নয়ন। উন্নয়নের লক্ষ্য পূরণের মধ্যে নতুন নতুন উপকরণ, শিল্পায়ন, বাঁধ নির্মাণ, জমি, অরণ্যের আগ্রাসন(?), উন্নয়নের মাধ্যমে স্থায়ী(?) প্রকল্প(?), শিক্ষানীতি, [illegible] বাসস্থানের জন্য উঁচু [illegible], শিক্ষা কেন্দ্র, বাণিজ্য কেন্দ্র, চিকিৎসালয়(?), নানা বাগান, রাস্তাঘাট, নগরায়ন। এমন কোনো উন্নয়ন পরিকল্পনা হয়নি, যার পরিকল্পনায় নেই, যার পরিবেশের উপর কোনো ক্ষতি [illegible] করে না, শুধু [illegible] ক্ষতি করে উন্নয়ন পরিকল্পনা [illegible] পরিবেশ [illegible] [illegible] জন্য এবং [illegible] সুবিধার জন্য [illegible] পরিবেশ [illegible] বাস্তু [illegible] সংখ্যা বৃদ্ধি পেয়েছে।

Vijaygarh Jyotish Ray College

(ঙ) পাইরিন থেকে ক্যান্সার হয়।

(চ) দূষিত জল ও পরিবেশের অ্যালার্জি, চর্মরোগ ও হাঁপানি রোগের বৃদ্ধি হয়।

মানুষের উপর জলদূষণ ও শিল্প বর্জ্যের প্রতিক্রিয়ার প্রভাব :-

আর্সেনিক দূষণের ফলে মানুষের যে রোগ হয় তাকে আর্সেনিক বলে।

আর্সেনিক দূষণের প্রভাব :-

* i) মূত্রগ্রন্থির প্রদাহ এবং স্নায়ু রোগ হয়।
ii) চর্মরোগ হয়। ঠোঁট ও মুখে নীলচে ছোপ দেখা যায় এবং মূত্রনালী প্রদাহ হয়।
iii) পায়ের পাতায় ফোলা ঘা হয় একে ব্ল্যাকফুট ডিজিজ বলে। এই রোগে বহু লোক মারা যায়।
iv) কলকারখানায়, খনিতে, বাগানে কর্মরত শ্রমিকরা ও অন্যান্য সুস্থ এলাকায় কর্মরত মানুষদের যে সমস্ত রোগ হয় অর্থাৎ যে সমস্ত রোগের উৎস হল তাদের কর্মস্থল সেইরকম রোগকে পেশাগত রোগ বলা হয়। যেমন – অ্যাসবেস্টস কণা থেকে অ্যাসবেস্টোসিস রোগ হয়। তেমনি সিলিকা কণা থেকে সিলিকোসিস রোগ হয়। সাধারণ সিডারোসিস রোগ। লোহার চূর্ণ থেকে সিডারোসিস রোগ। সীসা থেকে ডিসলেক্সিয়া, ক্যাডমিয়াম থেকে ইটাই-ইটাই রোগ হয়। কয়লার গুঁড়ো থেকে অ্যানথ্রাকোসিস রোগ হয়। তেজস্ক্রিয় দূষণের ফলে ক্যান্সার, চর্মরোগ এবং মৃত্যুও হয়। এছাড়া বিকলাঙ্গ শিশুর জন্ম কয়েক প্রজন্ম ধরে চলতে থাকে।

Vijaygarh Jyotish Ray College

পরিবেশ ও মানব স্বাস্থ্য :-

* মানুষের ওপর শব্দদূষণের প্রভাব :-

i) মানুষের মানসিক অবসাদ আসে এবং কর্মদক্ষতা কমে যায়।

ii) মেজাজ খিটখিটে হয়ে যায় বলে অকারণে বিরক্তি আসে।

iii) শ্রবণেন্দ্রিয় খারাপ হয়, কানে বধির হয়ে যায়।

iv) হৃৎস্পন্দনের গোলযোগ দেখা দেয় ও শ্বাস-প্রশ্বাসের হার অস্বাভাবিক হয়।

স্মৃতিশক্তি হ্রাস পায়।

vi) মাথা ঝিম ঝিম করে, বমিভাব আসে, স্নায়ু উত্তেজিত হয়।

vii) ইনসুলিনের ক্ষরণ অস্বাভাবিক হয়।

viii) গর্ভপাত হতে পারে এছাড়া দেহের কোষের ক্ষমতা হ্রাস পায়।

* মানুষের উপর বায়ুদূষণের প্রভাব :-

(a) ধোঁয়াশার ফলে ও যানবাহনের ধোঁয়ায় চোখে জ্বালা করে, হাঁপানি হয় এবং ফুসফুসের ক্যান্সার ও অন্যান্য রোগ (যেমন – যক্ষ্মা, ব্রঙ্কাইটিস) হতে পারে।

(b) ধোঁয়াতে মিশে থাকা কার্বন-মনো অক্সাইড রক্তের অক্সিজেন বহন ক্ষমতা কমিয়ে দেয়।

(c) ধোঁয়াশার যে অ্যাসিড তৈরি হয় তা বহু বাড়ি অট্টালিকাকে নষ্ট করে দেয়।

(d) যানবাহন থেকে উৎপন্ন এবং লিড জ্বালানি পোড়ানোর ধোঁয়ায় সিসা মিশে থাকে

Vijaygarh Jyotish Ray College

উপসংহার: পরিশেষে বলা যেতে পারে পৃথিবীতে দ্রুত জনসংখ্যা বৃদ্ধি ঘটেছে, তাতে উন্নত দেশগুলির উন্নয়নশীল দেশগুলি থেকে নিম্নস্তরের কথা চিন্তা করছে। বর্তমানে ভারতবর্ষে জনসংখ্যা হল ১.২৬ বিলিয়ন, পৃথিবীর দ্বিতীয় স্থান, কিন্তু ভারতবর্ষে দ্রুত জনসংখ্যা বৃদ্ধির ফলে বিশেষজ্ঞরা মনে করেছেন আগামী কয়েক বছরের মধ্যে জনসংখ্যা বৃদ্ধির হার ভারতবর্ষ প্রথম স্থান গ্রহণ করবে। অল্প বয়সে বিবাহ ও নারী শিক্ষা যতদিন না উন্নতিসাধন ঘটছে ততদিন জনসংখ্যা নিম্নস্তরে আসবে না। তাই যতদিন মানুষের পরিবার পরিকল্পনা সম্পর্কে নৈতিক চেতনা বৃদ্ধি বা চিন্তা ধারা বিকাশ না করে মানুষ দ্বিতীয় জাতীয় আয়, তথা মাথা পিছু আয়, উৎপাদন, দেশের অর্থনীতি ও সম্পদ, কখনো বিকাশ ঘটবে না। আমরা যত দিন আর দেশের অর্থসামাজিক দিক থেকে অনুন্নত হয়ে থাকব,

গ্রন্থপঞ্জী:- ১) পরিবেশবিদ্যা প্রসঙ্গে (ড: সুজন কুমার বাগ)

২) পরিবেশ বিদ্যা (আদিম কোম)

Vijaygarh Jyotish Ray College

কৃতজ্ঞতা স্বীকার

আমি সর্বপ্রথম কৃতজ্ঞতা জানাচ্ছি আমাদের কলেজের শারিরশিক্ষা বিভাগ প্রধান শিক্ষিকা মহাশয়া রাজশ্রী নিয়োগী - কে কারণ উনার সহযোগীতা ছাড়া এই প্রকল্পটি সম্পন্ন করা সম্ভব হত না, তাই সঙ্গে ধন্যবাদ জানাচ্ছি সহপাঠী ও শিক্ষকমন্ডলীদের যারা প্রকল্পটি রূপায়নের ক্ষেত্রে কোনো না কোনো ভাবে সহযোগিতা করেছেন।

ধন্যবাদান্তে —

শিক্ষার্থীর স্বাক্ষর মামনি হালদার

রোল নং: 20210859

সেমিস্টার 2nd

শিক্ষিকার স্বাক্ষর _____

তারিখ _____

Rajyasri Niyogi

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

প্লাস্টিক এবং মাইক্রো প্লাস্টিক ও তাদের বিশ্বব্যাপী প্রভাব

Name : Mousumi Karmakar
College Roll No : 20211014
CU Roll No : 212058-11-0055
CU Registration No : 058-1211-0184-21
Subject : ENVS
Department : Bengali Honours
Paper : AECC-2
Stream : Arts
Class : B.A Semester-II
Total Page : 18
Phone No : 8276058136

Rajyasri Mousumi

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

সূচিপত্র

Vijaygarh Jyotish Ray College

কৃতজ্ঞতা স্বীকার

প্রথমত, আমি আমাদের কলেজ ব্যবস্থাপনার অধ্যাপিকা আমার শিক্ষক শ্রীমতি এর প্রতি আমার বিনম্র কৃতজ্ঞতা প্রকাশ করতে চাই যিনি আমাকে এই সুযোগ দিয়েছেন, এই প্রকল্পটি করার জন্য, এই প্রকল্পটি করে আমি অনেক নতুন বিষয়ে শিখতে পেরেছি এবং আমি তাদের প্রতি অত্যন্ত কৃতজ্ঞ।

দ্বিতীয়ত, আমি আমার পিতামাতা এবং আমার বন্ধু-বান্ধবকে অনেক বেশি ধন্যবাদ দিতে চাই যারা আমাকে প্রকল্পটি এত অল্প সময়ের মধ্যে সম্পূর্ণ করতে সাহায্য করেছে, সর্বশেষে আমার শিক্ষকদের এর জন্য নয় যারা আমার বিভিন্ন বিষয়ে দিক দিয়ে ও এই সম্পূর্ণ করতে সাহায্য করেছে।

আদর ও ভালবাসা।

Vijaygarh Jyotish Ray College

সারাংশ :

পরিবেশে জমে থাকা প্লাস্টিক এবং প্লাস্টিকের তৈরি বস্তুগুলি প্লাস্টিক দূষণের [illegible] পরিবেশগত ক্ষতি যা বন্য প্রাণী এবং মানব জাতির স্বাস্থ্যের উপর বিরূপ প্রভাব ফেলে। প্লাস্টিকের একটি রাসায়নিক [illegible] [illegible] যা অনেক [illegible] পরিবেশগত অবক্ষয় প্রতিরোধী হয় এবং ধীর অবনতির [illegible] হয়ে থাকে। প্লাস্টিক দূষণ [illegible] পরিবেশ দূষণের [illegible] থাকে যা [illegible] রাসায়নিক [illegible] প্লাস্টিক [illegible] [illegible] থাকে। [illegible] [illegible] [illegible] পরিবেশ [illegible] হয়। [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] হয়। এবং [illegible] [illegible] [illegible] [illegible] [illegible] হয়। প্লাস্টিক [illegible] [illegible] [illegible] [illegible] [illegible] হয়। [illegible] [illegible] [illegible] হয়।

● ভূমিকা :

১৮৫৫ সালে আলেকজান্ডার পার্কস নামক এক বিজ্ঞানী প্রথম মানবসৃষ্ট আবিষ্কার করেন যার নাম দেন পার্কেসিন তিনি সেলুলোজ ও নাইট্রিক অ্যাসিড থেকে তৈরি করা হয়েছিল উদ্ভিজ্জ সেলুলোজ ও নাইট্রিক অ্যাসিড থেকে সম্পূর্ণ সিন্থেটিক করেন, তবে ১৯০৭ সালে লিও বেকল্যান্ড সম্পূর্ণ কৃত্রিম প্লাস্টিক আবিষ্কার করেন যার নাম দেন বেকেলাইট। এটিই প্রথম প্লাস্টিক যা বাণিজ্যিক ভাবে ব্যবহার করেন, যেমন টেলিফোন, বিদ্যুতের প্লাস্টিক উৎপাদনে অন্যান্য উপাদান যোগ করে, যা অন্যান্য ক্লোরিন ও হাইড্রোজেন ইত্যাদি (পলিমার), পলিমার হলো বহু মনোমারের সমন্বয়ে গঠিত এক বিশাল অণু। পলিমার সাধারণত বিভিন্ন প্রকার কার্বন ও হাইড্রোজেন দ্বারা গঠিত। এখন আধুনিক সময়ে প্লাস্টিক পলিমার, বিভিন্ন প্রকার পলিমার, পলিপ্রোপিলিন, পলিস্টাইরিন প্লাস্টিক, পলিথিন প্লাস্টিক আবিষ্কার হলে জীবনের সব পলিভিনাইল তৈরি প্লাস্টিকের আবিষ্কার ভাগে সম্পূর্ণ প্লাস্টিক তৈরি হয় ও ব্যবহারের প্রয়োজনীয়তা সব দিক দিয়ে বেড়েছে।

আমাদের প্রাত্যহিক জীবনে যা যা ব্যবহার করি, তার অধিকাংশই প্লাস্টিকের তৈরি, প্লাস্টিক হল কৃত্রিম ভাবে তৈরি পলিমার; যা মূলত জীবাশ্ম জ্বালানি বা প্রাকৃতিক গ্যাস থেকে রাসায়নিক উপায়ে তৈরি করা হয়। প্লাস্টিক সাধারণত ভাবে সবচেয়ে বেশি ব্যবহৃত হয় (পলিথিন), পলিস্টাইরিন, পলিপ্রোপিলিন ইত্যাদি।

Vijaygarh Jyotish Ray College

(১) মাইক্রোবর্জ্য ঃ

যে সকল প্লাস্টিক বর্জ্যের আকার 2 µm থেকে ৫ মিলিমিটার-এর মধ্যে, সেসকল প্লাস্টিক বর্জ্যকে মাইক্রোবর্জ্য বলা হয়। বড় ও আকারের বর্জ্যকে ভেঙে ও পেষণের মাধ্যমে মাইক্রোবর্জ্যে পরিণত করা হয়। মাইক্রোবর্জ্য প্রাকৃতিক উপাদান দ্বারা পরিবেশে ভেঙে যেতে পারে, কিন্তু এই আকারের প্লাস্টিক বহু দিন ধরে থেকে যায়, মাইক্রো-প্লাস্টিক জলে মিশে যেতে পারে। সমুদ্রের জলে, মাটিতে মিশে থাকা মাইক্রোবর্জ্য এক আকারের সামুদ্রিক জীব গ্রহণ করে। মাইক্রোবর্জ্যের এই আকারের সমুদ্রের প্লাস্টিক বিভিন্ন প্রাণীর দেহে প্রবেশ করে। 2008 সালে এক গবেষণায় প্লাস্টিক বিষক্রিয়ার ফলে প্রাণী, পাখি, মাছ ইত্যাদি, মানুষের মৃত্যু সম্ভাবনার কথা জানা যায়। সমুদ্রে মাছের মাধ্যমে মাইক্রোবর্জ্য খাদ্যশৃঙ্খলে প্রবেশ করে। মানুষের শরীরে প্রবেশ করলে ক্যান্সার সহ নানা রোগ হতে পারে। সমুদ্রে ও নদীতে প্লাস্টিকের পরিমাণ ক্রমশ বৃদ্ধি পাচ্ছে এবং তা প্রতিদিন ৩ লক্ষ মাছ খেয়ে থাকে, সমুদ্রের পাখির মৃত্যু ঘটায়; প্রায় ১,০০,০০০ প্লাস্টিক টুকরো/কিমি² সমুদ্রের জলে থাকে। সমুদ্রে প্রায় ১00,000 প্লাস্টিক টুকরো/কিমি² মাইক্রো প্লাস্টিক প্রতিদিন সমুদ্রে জমা হয়।

▲ [illegible]

[illegible] 800 [illegible] "[illegible] (Pseudomonas)", "[illegible] (Flavobacteria) (nylon-eating bacteria)", "[illegible]" [illegible]

Vijaygarh Jyotish Ray College

সমুদ্রের জলে প্লাস্টিক দূষণের কারণঃ

২০১২ সালে, গবেষকদের প্রতিবেদনে জানানো হয় যে, সমগ্র বিশ্বের সমুদ্রে আনুমানিক ১৬৫ মিলিয়ন টন প্লাস্টিক রয়েছে। "লিটার" সামুদ্রিক দূষিত প্লাস্টিক বা সকলের দূষিত অবস্থান করছে, ভাসমান এই প্লাস্টিক বা সমুদ্রে বিভিন্ন প্লাস্টিক বা প্লাস্টিক জাত বর্জ্য এবং এর মিশ্রণ প্লাস্টিক বা প্লাস্টিক জাত বর্জ্য জীব বৈচিত্র্যে প্রভাব পড়ে। বেশি পরিমাণে লিটার সমুদ্রের জীব বৈচিত্র্যে ক্ষতি করে, এই প্লাস্টিক অন্যান্যদের পরিমাণ বাড়িয়ে দেয়। এছাড়া প্লাস্টিক থেকে বিভিন্ন ক্ষতিকর পদার্থ বেরিয়ে আসে, যার জলে প্লাস্টিক থেকে পলিস্টাইরিন ইত্যাদি ক্ষতিকর পদার্থ যেমনঃ স্টাইরিন বেরিয়ে আসে। গবেষণায় জানা যায় যে, সমুদ্রের পানিতে পলিস্টাইরিনের মাত্রা বৃদ্ধি পাচ্ছে, এর পরিমাণ দিন দিন বাড়ছে, সামুদ্রিক মিলিয়ন টন ৫ মিলিয়নের বেশি প্লাস্টিক জমে আছে, সমুদ্রে প্রায় ৫ থেকে ৬ বিলিয়ন সামুদ্রিক যে পরিমাণ প্লাস্টিক আছে, সমুদ্রে প্রতি বছর সমুদ্রে জমা হচ্ছে ১৪ মিলিয়ন টনের বেশি প্লাস্টিক।

প্রাণীকুলের উপর প্রভাবঃ

প্লাস্টিক দূষণ প্রাণীকুলের অন্যান্যদের উপর বিরূপ প্রভাব ফেলে। প্লাস্টিক দূষণ প্রাণীর উপর বিভিন্ন ভাবে প্রভাব ফেলে, যেমন, এটি সামুদ্রিক স্তন্যপায়ী প্রাণীর উপর বিরূপ প্রভাব ফেলে, "Introduction to Marine Biology" বই অনুসারে প্লাস্টিক দূষণ সামুদ্রিক প্রাণীর জন্য "একটি সর্বাধিক হুমকি" হয়ে দাঁড়িয়েছে, বিশেষ করে সামুদ্রিক প্রাণীদের, যেমনঃ সামুদ্রিক কচ্ছপের পাকস্থলীতে বিভিন্ন প্লাস্টিক পাওয়া গেছে, এছাড়াও বিভিন্ন প্রাণী পাওয়া যায়, তিমির পাকস্থলীতে প্লাস্টিক বর্জ্য পেয়েছেন, এমনকি পাকস্থলীতে প্লাস্টিক বর্জ্য থাকার ফলে প্রাণী মারা গেছে। কারণ প্লাস্টিক বর্জ্য খাদ্য ভেবে প্রাণী খেয়ে নেয়, ফলে প্রাণীর মৃত্যুও হয়, অনেক ক্ষেত্রে, খাদ্যের অভাবে মারা যায়, এতে প্রাণীর মৃত্যুও হয়, সামুদ্রিক প্রাণী প্লাস্টিক খায় যেমন জল সহ বিষাক্ত হয়।

Vijaygarh Jyotish Ray College

▲ [illegible]

[illegible]

▲ [illegible]

[illegible]

Vijaygarh Jyotish Ray College

[illegible]
[illegible]
[illegible]
[illegible]

▲ [illegible]

[illegible]
[illegible]
[illegible]
[illegible]
[illegible] 2022 [illegible]
[illegible]
[illegible] 80 [illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Vijaygarh Jyotish Ray College

▲ প্লাস্টিক দূষণের প্রতিকার :

প্লাস্টিকের দূষণরোধকল্পে সরকার ও আমাদের সচেতন প্রতিরোধের ব্যবস্থা নিতে হবে, যেমন ———

- ৫০ মাইক্রোনের নীচে পাতলা প্লাস্টিকের উৎপাদন ও ব্যবহার নিষিদ্ধ করা ও বাজারে অন্যান্য সামগ্রীর বিকল্প প্রচলন করা।
- যেখানে সেখানে প্লাস্টিক ফেলে না দিয়ে নির্দিষ্ট ডাস্টবিনে ফেলতে হবে যাতে সহজে সেগুলিকে সংগ্রহ করা যায় ও পুনর্ব্যবহারযোগ্য করা যায়।
- কোনো প্লাস্টিক দ্রব্য ব্যবহার করার পর তা যেখানে সেখানে ফেলে দেওয়া যাবে না, ব্যবহারের জন্য ফিরিয়ে দেওয়া যায় কিনা তা দেখতে হবে।
- দোকানে বা অন্যত্র মালপত্র প্লাস্টিকের ব্যাগে (ক্যারিব্যাগ ও পলিথিন ব্যাগে) দেওয়া বন্ধ করতে হবে, কাগজের ঠোঙা বা পাটের ব্যাগ (ব্যবহার) করতে হবে। প্লাস্টিক নয়, নিষেধাজ্ঞা ও প্লাস্টিকের বদলে কাগজের ব্যাগ, কাপড়ের তৈরি সামগ্রী ব্যবহার করতে হবে।
- আমাদের প্লাস্টিকের ব্যবহার ও তার ক্ষতিকারক দিক সম্পর্কে সচেতন করা এবং সচেতনতা বৃদ্ধি।

Vijaygarh Jyotish Ray College

[illegible]

[illegible]

Vijaygarh Jyotish Ray College

● অগ্রগতি ঃ

▲ প্লাস্টিক দূষণ কমানোর জন্য বিশ্বের বিভিন্ন দেশে পদক্ষেপ গ্রহণ করেছে। অনেক ও প্লাস্টিক নিষিদ্ধকরণ ব্যবস্থা গ্রহণ করেছে। কিছু কিছু দেশ প্লাস্টিক ব্যাগ এর উপর কর আরোপ করেছে এবং বাধ্যতামূলক পুনর্ব্যবহারের আইন প্রণয়ন করেছে। কিছু কিছু সংস্থা এবং সরকার প্রতিস্থাপন প্লাস্টিক পণ্য যেমন: প্লাস্টিক ব্যাগ, বোতলজাত জল ইত্যাদি ব্যবহারের উপর নিষেধাজ্ঞা আরোপ করেছে।

● বর্তমান সমস্যার এবং ভবিষ্যৎ পদক্ষেপ ঃ

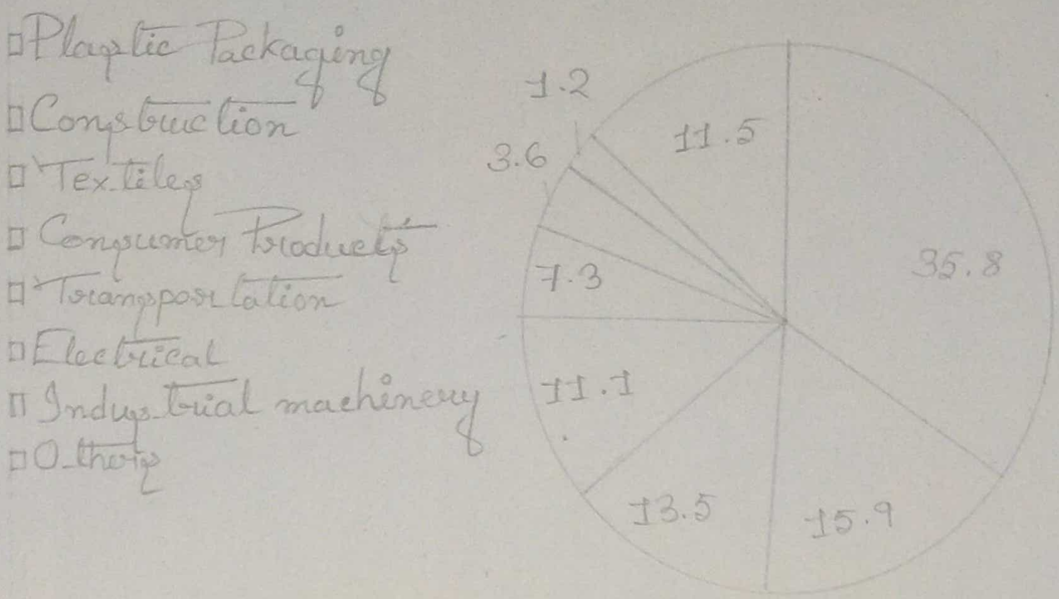
বর্তমান সমস্যার সমাধানে পানীয় জল ও স্বাস্থ্য ব্যবস্থা উন্নয়নের সমস্যাগুলির বিভিন্ন বিষয়ে পানীয় জল প্রদানের জন্য প্লাস্টিক বোতলের ব্যবহার বন্ধ করে এবং প্লাস্টিক বর্জ্য বৃদ্ধি করে না যেমন উন্নত পানীয় জল প্রদান করতে সক্ষম হয়েছেন। ভারতীয় রাজ্য সরকারগুলি একক ও অন্যান্য প্লাস্টিক বোতল ও প্লাস্টিক জাতীয় ব্যবহার নিষিদ্ধ করেছে। বিভিন্ন রাজ্য সরকারগুলি একক প্লাস্টিক বোতল এবং ব্যবহার নিষিদ্ধ করা হয়েছে।

Vijaygarh Jyotish Ray College

বিজয়গড় জ্যোতিষ রায় মহাবিদ্যালয় ও গবেষণা কেন্দ্র 2014 সালে
প্রতিষ্ঠিত হয়েছে। এখানে স্নাতক স্তরে বাংলা, ইতিহাস, দর্শন
ইত্যাদি বিষয়ে পঠন-পাঠন চালু আছে। "মূল্য বর্ধন" প্রতিষ্ঠানে নতুন
করে, যেখানে অপচয়কারী বর্জ্য বিশেষ করে জল যেখানে নষ্ট হচ্ছে
সেগুলো ব্যবহারকে বাড়িয়ে তোলা হয়েছে। এই অপচয়কে
পুনর্ব্যবহার যোগ্য করা এবং এমন কিছু উপাদান যেগুলো
পানযোগ্য ব্যবহার করা হয়েছে। প্রতিষ্ঠানের ছাত্র-ছাত্রী
এমন কিছু সৃষ্টি করেছে যা দিয়ে
করা যেতে পারে। এই অনুষ্ঠান ১১/১ করে ১20 খ্রিস্টাব্দ
এর বর্ষ উদ্‌যাপন করা হয়েছে।

Vijaygarh Jyotish Ray College

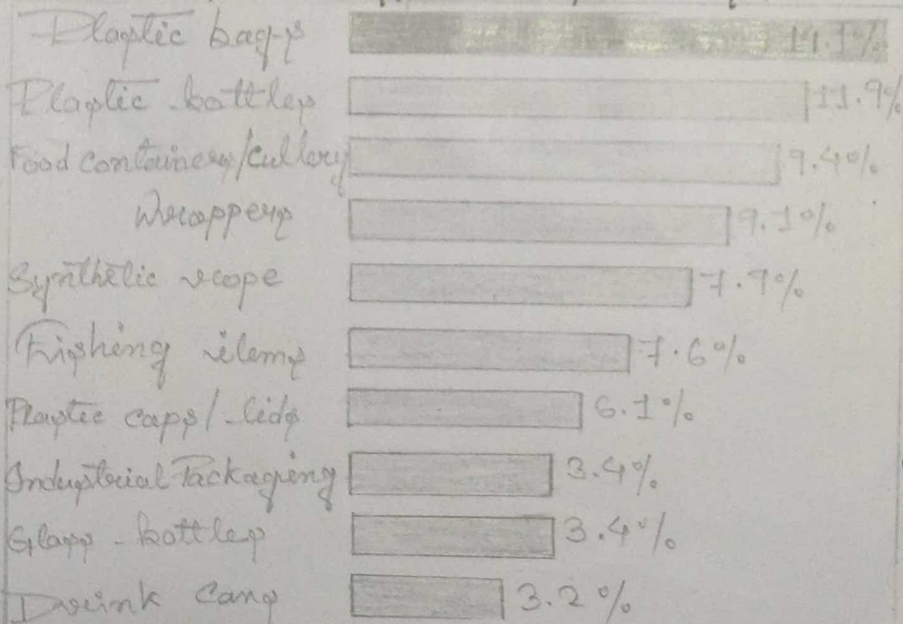
WHERE PLASTICS ARE USED In (%)



[illegible]

Plastic Items Dominate Ocean Garbage

The 10 most widespread waste items polluting the world's oceans



[illegible]

Vijaygarh Jyotish Ray College

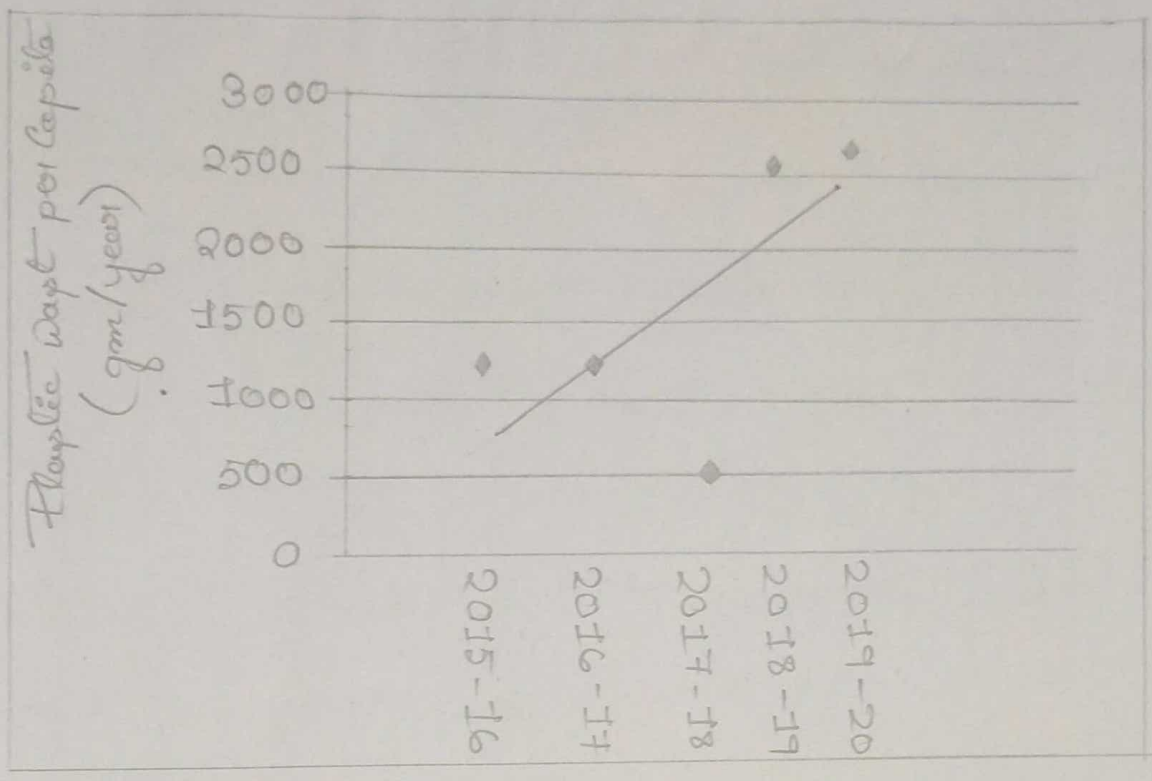
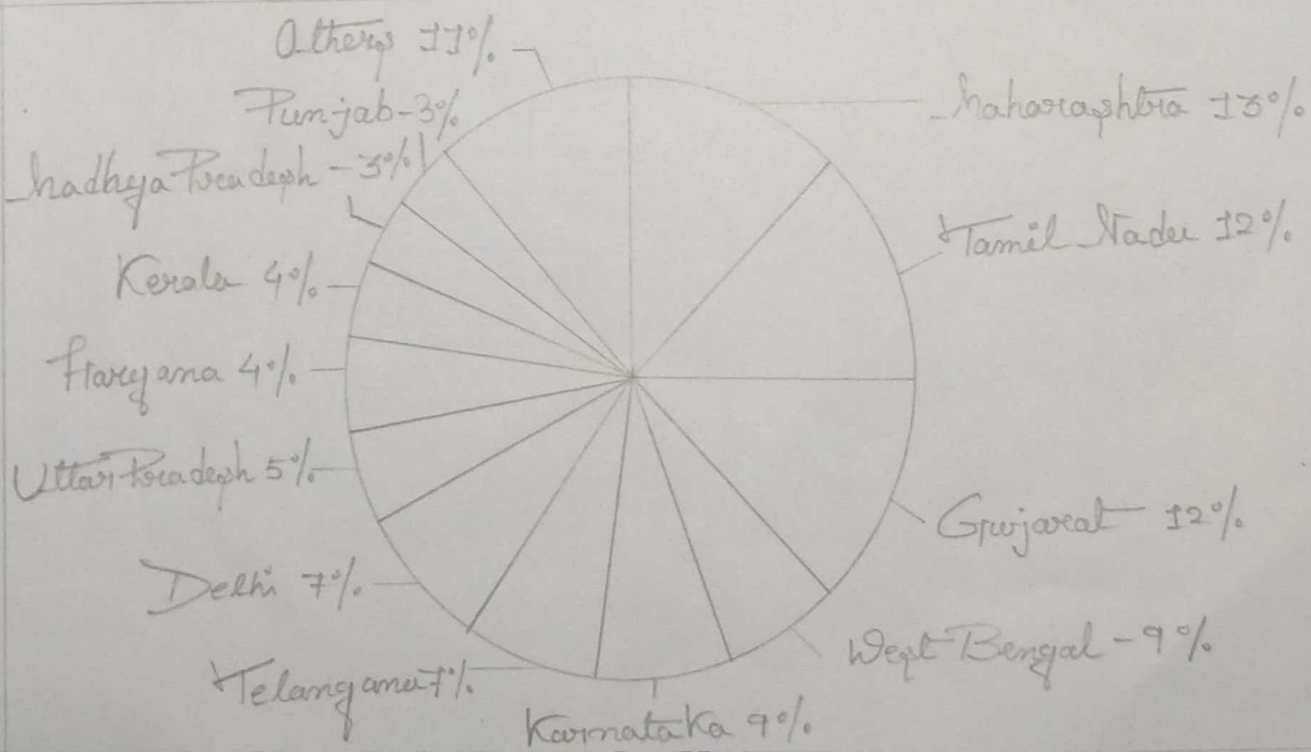


Fig. 2: Per capita Plastic waste generation

State/UT wise Plastic Waste Generation



Vijaygarh Jyotish Ray College

- [illegible]

[illegible]

Vijaygarh Jyotish Ray College

• তথ্যসূত্র:

১) [illegible] ২) [illegible] ৩) [illegible] ৪) [illegible] ৫) [illegible] ৬) [illegible] ৭) [illegible] ৮) [illegible] ৯) [illegible] ১০) [illegible] ১১) [illegible] ১২) [illegible] ১৩) [illegible] ১৪) [illegible] ১৫) [illegible] ১৬) [illegible] ১৭) [illegible] ১৮) [illegible] ১৯) [illegible] ২০) [illegible] ২১) [illegible] ২২) [illegible] ২৩) [illegible] ২৪) [illegible] ২৫) [illegible] ২৬) [illegible] ২৭) [illegible] ২৮) [illegible] ২৯) [illegible] ৩০) [illegible] ৩১) [illegible] ৩২) [illegible] ৩৩) [illegible] ৩৪) [illegible] ৩৫) [illegible] ৩৬) [illegible] ৩৭) [illegible] ৩৮) [illegible] ৩৯) [illegible] ৪০) [illegible] ৪১) [illegible] ৪২) [illegible] ৪৩) [illegible] ৪৪) [illegible] ৪৫) [illegible] ৪৬) [illegible] ৪৭) [illegible] ৪৮) [illegible] ৪৯) [illegible] ৫০) [illegible] ৫১) [illegible] ৫২) [illegible] ৫৩) [illegible] ৫৪) [illegible] ৫৫) [illegible] ৫৬) [illegible] ৫৭) [illegible] ৫৮) [illegible] ৫৯) [illegible] ৬০) [illegible] ৬১) [illegible] ৬২) [illegible] ৬৩) [illegible] ৬৪) [illegible] ৬৫) [illegible] ৬৬) [illegible] ৬৭) [illegible] ৬৮) [illegible] ৬৯) [illegible] ৭০) [illegible] ৭১) [illegible] ৭২) [illegible] ৭৩) [illegible] ৭৪) [illegible] ৭৫) [illegible] ৭৬) [illegible] ৭৭) [illegible] ৭৮) [illegible] ৭৯) [illegible] ৮০) [illegible] ৮১) [illegible] ৮২) [illegible] ৮৩) [illegible] ৮৪) [illegible] ৮৫) [illegible] ৮৬) [illegible] ৮৭) [illegible] ৮৮) [illegible] ৮৯) [illegible] ৯০) [illegible] ৯১) [illegible] ৯২) [illegible] ৯৩) [illegible] ৯৪) [illegible] ৯৫) [illegible] ৯৬) [illegible] ৯৭) [illegible] ৯৮) [illegible] ৯৯) [illegible] ১০০) [illegible] ১০১) [illegible] ১০২) [illegible] ১০৩) [illegible] ১০৪) [illegible] ১০৫) [illegible] ১০৬) [illegible] ১০৭) [illegible] ১০৮) [illegible] ১০৯) [illegible] ১১০) [illegible] ১১১) [illegible] ১১২) [illegible] ১১৩) [illegible] ১১৪) [illegible] ১১৫) [illegible] ১১৬) [illegible] ১১৭) [illegible] ১১৮) [illegible] ১১৯) [illegible] ১২০) [illegible] ১২১) [illegible] ১২২) [illegible] ১২৩) [illegible] ১২৪) [illegible] ১২৫) [illegible] ১২৬) [illegible] ১২৭) [illegible] ১২৮) [illegible] ১২৯) [illegible] ১৩০) [illegible] ১৩১) [illegible] ১৩২) [illegible] ১৩৩) [illegible] ১৩৪) [illegible] ১৩৫) [illegible] ১৩৬) [illegible] ১৩৭) [illegible] ১৩৮) [illegible] ১৩৯) [illegible] ১৪০) [illegible] ১৪১) [illegible] ১৪২) [illegible] ১৪৩) [illegible] ১৪৪) [illegible] ১৪৫) [illegible] ১৪৬) [illegible] ১৪৭) [illegible] ১৪৮) [illegible] ১৪৯) [illegible] ১৫০) [illegible] ১৫১) [illegible] ১৫২) [illegible] ১৫৩) [illegible] ১৫৪) [illegible] ১৫৫) [illegible] ১৫৬) [illegible] ১৫৭) [illegible] ১৫৮) [illegible] ১৫৯) [illegible] ১৬০) [illegible] ১৬১) [illegible] ১৬২) [illegible] ১৬৩) [illegible] ১৬৪) [illegible] ১৬৫) [illegible] ১৬৬) [illegible] ১৬৭) [illegible] ১৬৮) [illegible] ১৬৯) [illegible] ১৭০) [illegible] ১৭১) [illegible] ১৭২) [illegible] ১৭৩) [illegible] ১৭৪) [illegible] ১৭৫) [illegible] ১৭৬) [illegible] ১৭৭) [illegible] ১৭৮) [illegible] ১৭৯) [illegible] ১৮০) [illegible] ১৮১) [illegible] ১৮২) [illegible] ১৮৩) [illegible] ১৮৪) [illegible] ১৮৫) [illegible] ১৮৬) [illegible] ১৮৭) [illegible] ১৮৮) [illegible] ১৮৯) [illegible] ১৯০) [illegible] ১৯১) [illegible] ১৯২) [illegible] ১৯৩) [illegible] ১৯৪) [illegible] ১৯৫) [illegible] ১৯৬) [illegible] ১৯৭) [illegible] ১৯৮) [illegible] ১৯৯) [illegible] ২০০) [illegible] ২০১) [illegible] ২০২) [illegible] ২০৩) [illegible] ২০৪) [illegible] ২০৫) [illegible] ২০৬) [illegible] ২০৭) [illegible] ২০৮) [illegible] ২০৯) [illegible] ২১০) [illegible] ২১১) [illegible] ২১২) [illegible] ২১৩) [illegible] ২১৪) [illegible] ২১৫) [illegible] ২১৬) [illegible] ২১৭) [illegible] ২১৮) [illegible] ২১৯) [illegible] ২২০) [illegible] ২২১) [illegible] ২২২) [illegible] ২২৩) [illegible] ২২৪) [illegible] ২২৫) [illegible] ২২৬) [illegible] ২২৭) [illegible] ২২৮) [illegible] ২২৯) [illegible] ২৩০) [illegible] ২৩১) [illegible] ২৩২) [illegible] ২৩৩) [illegible] ২৩৪) [illegible] ২৩৫) [illegible] ২৩৬) [illegible] ২৩৭) [illegible] ২৩৮) [illegible] ২৩৯) [illegible] ২৪০) [illegible] ২৪১) [illegible] ২৪২) [illegible] ২৪৩) [illegible] ২৪৪) [illegible] ২৪৫) [illegible] ২৪৬) [illegible] ২৪৭) [illegible] ২৪৮) [illegible] ২৪৯) [illegible] ২৫০) [illegible] ২৫১) [illegible] ২৫২) [illegible] ২৫৩) [illegible] ২৫৪) [illegible] ২৫৫) [illegible] ২৫৬) [illegible] ২৫৭) [illegible] ২৫৮) [illegible] ২৫৯) [illegible] ২৬০) [illegible] ২৬১) [illegible] ২৬২) [illegible] ২৬৩) [illegible] ২৬৪) [illegible] ২৬৫) [illegible] ২৬৬) [illegible] ২৬৭) [illegible] ২৬৮) [illegible] ২৬৯) [illegible] ২৭০) [illegible] ২৭১) [illegible] ২৭২) [illegible] ২৭৩) [illegible] ২৭৪) [illegible] ২৭৫) [illegible] ২৭৬) [illegible] ২৭৭) [illegible] ২৭৮) [illegible] ২৭৯) [illegible] ২৮০) [illegible] ২৮১) [illegible] ২৮২) [illegible] ২৮৩) [illegible] ২৮৪) [illegible] ২৮৫) [illegible] ২৮৬) [illegible] ২৮৭) [illegible] ২৮৮) [illegible] ২৮৯) [illegible] ২৯০) [illegible] ২৯১) [illegible] ২৯২) [illegible] ২৯৩) [illegible] ২৯৪) [illegible] ২৯৫) [illegible] ২৯৬) [illegible] ২৯৭) [illegible] ২৯৮) [illegible] ২৯৯) [illegible] ৩০০) [illegible] ৩০১) [illegible] ৩০২) [illegible] ৩০৩) [illegible] ৩০৪) [illegible] ৩০৫) [illegible] ৩০৬) [illegible] ৩০৭) [illegible] ৩০৮) [illegible] ৩০৯) [illegible] ৩১০) [illegible] ৩১১) [illegible] ৩১২) [illegible] ৩১৩) [illegible] ৩১৪) [illegible] ৩১৫) [illegible] ৩১৬) [illegible] ৩১৭) [illegible] ৩১৮) [illegible] ৩১৯) [illegible] ৩২০) [illegible] ৩২১) [illegible] ৩২২) [illegible] ৩২৩) [illegible] ৩২৪) [illegible] ৩২৫) [illegible] ৩২৬) [illegible] ৩২৭) [illegible] ৩২৮) [illegible] ৩২৯) [illegible] ৩৩০) [illegible] ৩৩১) [illegible] ৩৩২) [illegible] ৩৩৩) [illegible] ৩৩৪) [illegible] ৩৩৫) [illegible] ৩৩৬) [illegible] ৩৩৭) [illegible] ৩৩৮) [illegible] ৩৩৯) [illegible] ৩৪০) [illegible] ৩৪১) [illegible] ৩৪২) [illegible] ৩৪৩) [illegible] ৩৪৪) [illegible] ৩৪৫) [illegible] ৩৪৬) [illegible] ৩৪৭) [illegible] ৩৪৮) [illegible] ৩৪৯) [illegible] ৩৫০) [illegible] ৩৫১) [illegible] ৩৫২) [illegible] ৩৫৩) [illegible] ৩৫৪) [illegible] ৩৫৫) [illegible] ৩৫৬) [illegible] ৩৫৭) [illegible] ৩৫৮) [illegible] ৩৫৯) [illegible] ৩৬০) [illegible] ৩৬১) [illegible] ৩৬২) [illegible] ৩৬৩) [illegible] ৩৬৪) [illegible] ৩৬৫) [illegible] ৩৬৬) [illegible] ৩৬৭) [illegible] ৩৬৮) [illegible] ৩৬৯) [illegible] ৩৭০) [illegible] ৩৭১) [illegible] ৩৭২) [illegible] ৩৭৩) [illegible] ৩৭৪) [illegible] ৩৭৫) [illegible] ৩৭৬) [illegible] ৩৭৭) [illegible] ৩৭৮) [illegible] ৩৭৯) [illegible] ৩৮০) [illegible] ৩৮১) [illegible] ৩৮২) [illegible] ৩৮৩) [illegible] ৩৮৪) [illegible] ৩৮৫) [illegible] ৩৮৬) [illegible] ৩৮৭) [illegible] ৩৮৮) [illegible] ৩৮৯) [illegible] ৩৯০) [illegible] ৩৯১) [illegible] ৩৯২) [illegible] ৩৯৩) [illegible] ৩৯৪) [illegible] ৩৯৫) [illegible] ৩৯৬) [illegible] ৩৯৭) [illegible] ৩৯৮) [illegible] ৩৯৯) [illegible] ৪০০) [illegible] ৪০১) [illegible] ৪০২) [illegible] ৪০৩) [illegible] ৪০৪) [illegible] ৪০৫) [illegible] ৪০৬) [illegible] ৪০৭) [illegible] ৪০৮) [illegible] ৪০৯) [illegible] ৪১০) [illegible] ৪১১) [illegible] ৪১২) [illegible] ৪১৩) [illegible] ৪১৪) [illegible] ৪১৫) [illegible] ৪১৬) [illegible] ৪১৭) [illegible] ৪১৮) [illegible] ৪১৯) [illegible] ৪২০) [illegible] ৪২১) [illegible] ৪২২) [illegible] ৪২৩) [illegible] ৪২৪) [illegible] ৪২৫) [illegible] ৪২৬) [illegible] ৪২৭) [illegible] ৪২৮) [illegible] ৪২৯) [illegible] ৪৩০) [illegible] ৪৩১) [illegible] ৪৩২) [illegible] ৪৩৩) [illegible] ৪৩৪) [illegible] ৪৩৫) [illegible] ৪৩৬) [illegible] ৪৩৭) [illegible] ৪৩৮) [illegible] ৪৩৯) [illegible] ৪৪০) [illegible] ৪৪১) [illegible] ৪৪২) [illegible] ৪৪৩) [illegible] ৪৪৪) [illegible] ৪৪৫) [illegible] ৪৪৬) [illegible] ৪৪৭) [illegible] ৪৪৮) [illegible] ৪৪৯) [illegible] ৪৫০) [illegible] ৪৫১) [illegible] ৪৫২) [illegible] ৪৫৩) [illegible] ৪৫৪) [illegible] ৪৫৫) [illegible] ৪৫৬) [illegible] ৪৫৭) [illegible] ৪৫৮) [illegible] ৪৫৯) [illegible] ৪৬০) [illegible] ৪৬১) [illegible] ৪৬২) [illegible] ৪৬৩) [illegible] ৪৬৪) [illegible] ৪৬৫) [illegible] ৪৬৬) [illegible] ৪৬৭) [illegible] ৪৬৮) [illegible] ৪৬৯) [illegible] ৪৭০) [illegible] ৪৭১) [illegible] ৪৭২) [illegible] ৪৭৩) [illegible] ৪৭৪) [illegible] ৪৭৫) [illegible] ৪৭৬) [illegible] ৪৭৭) [illegible] ৪৭৮) [illegible] ৪৭৯) [illegible] ৪৮০) [illegible] ৪৮১) [illegible] ৪৮২) [illegible] ৪৮৩) [illegible] ৪৮৪) [illegible] ৪৮৫) [illegible] ৪৮৬) [illegible] ৪৮৭) [illegible] ৪৮৮) [illegible] ৪৮৯) [illegible] ৪৯০) [illegible] ৪৯১) [illegible] ৪৯২) [illegible] ৪৯৩) [illegible] ৪৯৪) [illegible] ৪৯৫) [illegible] ৪৯৬) [illegible] ৪৯৭) [illegible] ৪৯৮) [illegible] ৪৯৯) [illegible] ৫০০) [illegible] ৫০১) [illegible] ৫০২) [illegible] ৫০৩) [illegible] ৫০৪) [illegible] ৫০৫) [illegible] ৫০৬) [illegible] ৫০৭) [illegible] ৫০৮) [illegible] ৫০৯) [illegible] ৫১০) [illegible] ৫১১) [illegible] ৫১২) [illegible] ৫১৩) [illegible] ৫১৪) [illegible] ৫১৫) [illegible] ৫১৬) [illegible] ৫১৭) [illegible] ৫১৮) [illegible] ৫১৯) [illegible] ৫২০) [illegible] ৫২১) [illegible] ৫২২) [illegible] ৫২৩) [illegible] ৫২৪) [illegible] ৫২৫) [illegible] ৫২৬) [illegible] ৫২৭) [illegible] ৫২৮) [illegible] ৫২৯) [illegible] ৫৩০) [illegible] ৫৩১) [illegible] ৫৩২) [illegible] ৫৩৩) [illegible] ৫৩৪) [illegible] ৫৩৫) [illegible] ৫৩৬) [illegible] ৫৩৭) [illegible] ৫৩৮) [illegible] ৫৩৯) [illegible] ৫৪০) [illegible] ৫৪১) [illegible] ৫৪২) [illegible] ৫৪৩) [illegible] ৫৪৪) [illegible] ৫৪৫) [illegible] ৫৪৬) [illegible] ৫৪৭) [illegible] ৫৪৮) [illegible] ৫৪৯) [illegible] ৫৫০) [illegible] ৫৫১) [illegible] ৫৫২) [illegible] ৫৫৩) [illegible] ৫৫৪) [illegible] ৫৫৫) [illegible] ৫৫৬) [illegible] ৫৫৭) [illegible] ৫৫৮) [illegible] ৫৫৯) [illegible] ৫৬০) [illegible] ৫৬১) [illegible] ৫৬২) [illegible] ৫৬৩) [illegible] ৫৬৪) [illegible] ৫৬৫) [illegible] ৫৬৬) [illegible] ৫৬৭) [illegible] ৫৬৮) [illegible] ৫৬৯) [illegible] ৫৭০) [illegible] ৫৭১) [illegible] ৫৭২) [illegible] ৫৭৩) [illegible] ৫৭৪) [illegible] ৫৭৫) [illegible] ৫৭৬) [illegible] ৫৭৭) [illegible] ৫৭৮) [illegible] ৫৭৯) [illegible] ৫৮০) [illegible] ৫৮১) [illegible] ৫৮২) [illegible] ৫৮৩) [illegible] ৫৮৪) [illegible] ৫৮৫) [illegible] ৫৮৬) [illegible] ৫৮৭) [illegible] ৫৮৮) [illegible] ৫৮৯) [illegible] ৫৯০) [illegible] ৫৯১) [illegible] ৫৯২) [illegible] ৫৯৩) [illegible] ৫৯৪) [illegible] ৫৯৫) [illegible] ৫৯৬) [illegible] ৫৯৭) [illegible] ৫৯৮) [illegible] ৫৯৯) [illegible] ৬০০) [illegible] ৬০১) [illegible] ৬০২) [illegible] ৬০৩) [illegible] ৬০৪) [illegible] ৬০৫) [illegible] ৬০৬) [illegible] ৬০৭) [illegible] ৬০৮) [illegible] ৬০৯) [illegible] ৬১০) [illegible] ৬১১) [illegible] ৬১২) [illegible] ৬১৩) [illegible] ৬১৪) [illegible] ৬১৫) [illegible] ৬১৬) [illegible] ৬১৭) [illegible] ৬১৮) [illegible] ৬১৯) [illegible] ৬২০) [illegible] ৬২১) [illegible] ৬২২) [illegible] ৬২৩) [illegible] ৬২৪) [illegible] ৬২৫) [illegible] ৬২৬) [illegible] ৬২৭) [illegible] ৬২৮) [illegible] ৬২৯) [illegible] ৬৩০) [illegible] ৬৩১) [illegible] ৬৩২) [illegible] ৬৩৩) [illegible] ৬৩৪) [illegible] ৬৩৫) [illegible] ৬৩৬) [illegible] ৬৩৭) [illegible] ৬৩৮) [illegible] ৬৩৯) [illegible] ৬৪০) [illegible] ৬৪১) [illegible] ৬৪২) [illegible] ৬৪৩) [illegible] ৬৪৪) [illegible] ৬৪৫) [illegible] ৬৪৬) [illegible] ৬৪৭) [illegible] ৬৪৮) [illegible] ৬৪৯) [illegible] ৬৫০) [illegible] ৬৫১) [illegible] ৬৫২) [illegible] ৬৫৩) [illegible] ৬৫৪) [illegible] ৬৫৫) [illegible] ৬৫৬) [illegible] ৬৫৭) [illegible] ৬৫৮) [illegible] ৬৫৯) [illegible] ৬৬০) [illegible] ৬৬১) [illegible] ৬৬২) [illegible] ৬৬৩) [illegible] ৬৬৪) [illegible] ৬৬৫) [illegible] ৬৬৬) [illegible] ৬৬৭) [illegible] ৬৬৮) [illegible] ৬৬৯) [illegible] ৬৭০) [illegible] ৬৭১) [illegible] ৬৭২) [illegible] ৬৭৩) [illegible] ৬৭৪) [illegible] ৬৭৫) [illegible] ৬৭৬) [illegible] ৬৭৭) [illegible] ৬৭৮) [illegible] ৬৭৯) [illegible] ৬৮০) [illegible] ৬৮১) [illegible] ৬৮২) [illegible] ৬৮৩) [illegible] ৬৮৪) [illegible] ৬৮৫) [illegible] ৬৮৬) [illegible] ৬৮৭) [illegible] ৬৮৮) [illegible] ৬৮৯) [illegible] ৬৯০) [illegible] ৬৯১) [illegible] ৬৯২) [illegible] ৬৯৩) [illegible] ৬৯৪) [illegible] ৬৯৫) [illegible] ৬৯৬) [illegible] ৬৯৭) [illegible] ৬৯৮) [illegible] ৬৯৯) [illegible] ৭০০) [illegible] ৭০১) [illegible] ৭০২) [illegible] ৭০৩) [illegible] ৭০৪) [illegible] ৭০৫) [illegible] ৭০৬) [illegible] ৭০৭) [illegible] ৭০৮) [illegible] ৭০৯) [illegible] ৭১০) [illegible] ৭১১) [illegible] ৭১২) [illegible] ৭১৩) [illegible] ৭১৪) [illegible] ৭১৫) [illegible] ৭১৬) [illegible] ৭১৭) [illegible] ৭১৮) [illegible] ৭১৯) [illegible] ৭২০) [illegible] ৭২১) [illegible] ৭২২) [illegible] ৭২৩) [illegible] ৭২৪) [illegible] ৭২৫) [illegible] ৭২৬) [illegible] ৭২৭) [illegible] ৭২৮) [illegible] ৭২৯) [illegible] ৭৩০) [illegible] ৭৩১) [illegible] ৭৩২) [illegible] ৭৩৩) [illegible] ৭৩৪) [illegible] ৭৩৫) [illegible] ৭৩৬) [illegible] ৭৩৭) [illegible] ৭৩৮) [illegible] ৭৩৯) [illegible] ৭৪০) [illegible] ৭৪১) [illegible] ৭৪২) [illegible] ৭৪৩) [illegible] ৭৪৪) [illegible] ৭৪৫) [illegible] ৭৪৬) [illegible] ৭৪৭) [illegible] ৭৪৮) [illegible] ৭৪৯) [illegible] ৭৫০) [illegible] ৭৫১) [illegible] ৭৫২) [illegible] ৭৫৩) [illegible] ৭৫৪) [illegible] ৭৫৫) [illegible] ৭৫৬) [illegible] ৭৫৭) [illegible] ৭৫৮) [illegible] ৭৫৯) [illegible] ৭৬০) [illegible] ৭৬১) [illegible] ৭৬২) [illegible] ৭৬৩) [illegible] ৭৬৪) [illegible] ৭৬৫) [illegible] ৭৬৬) [illegible] ৭৬৭) [illegible] ৭৬৮) [illegible] ৭৬৯) [illegible] ৭৭০) [illegible] ৭৭১) [illegible] ৭৭২) [illegible] ৭৭৩) [illegible] ৭৭৪) [illegible] ৭৭৫) [illegible] ৭৭৬) [illegible] ৭৭৭) [illegible] ৭৭৮) [illegible] ৭৭৯) [illegible] ৭৮০) [illegible] ৭৮১) [illegible] ৭৮২) [illegible] ৭৮৩) [illegible] ৭৮৪) [illegible] ৭৮৫) [illegible] ৭৮৬) [illegible] ৭৮৭) [illegible] ৭৮৮) [illegible] ৭৮৯) [illegible] ৭৯০) [illegible] ৭৯১) [illegible] ৭৯২) [illegible] ৭৯৩) [illegible] ৭৯৪) [illegible] ৭৯৫) [illegible] ৭৯৬) [illegible] ৭৯৭) [illegible] ৭৯৮) [illegible] ৭৯৯) [illegible] ৮০০) [illegible] ৮০১) [illegible] ৮০২) [illegible] ৮০৩) [illegible] ৮০৪) [illegible] ৮০৫) [illegible] ৮০৬) [illegible] ৮০৭) [illegible] ৮০৮) [illegible] ৮০৯) [illegible] ৮১০) [illegible] ৮১১) [illegible] ৮১২) [illegible] ৮১৩) [illegible] ৮১৪) [illegible] ৮১৫) [illegible] ৮১৬) [illegible] ৮১৭) [illegible] ৮১৮) [illegible] ৮১৯) [illegible] ৮২০) [illegible] ৮২১) [illegible] ৮২২) [illegible] ৮২৩) [illegible] ৮২৪) [illegible] ৮২৫) [illegible] ৮২৬) [illegible] ৮২৭) [illegible] ৮২৮) [illegible] ৮২৯) [illegible] ৮৩০) [illegible] ৮৩১) [illegible] ৮৩২) [illegible] ৮৩৩) [illegible] ৮৩৪) [illegible] ৮৩৫) [illegible] ৮৩৬) [illegible] ৮৩৭) [illegible] ৮৩৮) [illegible] ৮৩৯) [illegible] ৮৪০) [illegible] ৮৪১) [illegible] ৮৪২) [illegible] ৮৪৩) [illegible] ৮৪৪) [illegible] ৮৪৫) [illegible] ৮৪৬) [illegible] ৮৪৭) [illegible] ৮৪৮) [illegible] ৮৪৯) [illegible] ৮৫০) [illegible] ৮৫১) [illegible] ৮৫২) [illegible] ৮৫৩) [illegible] ৮৫৪) [illegible] ৮৫৫) [illegible] ৮৫৬) [illegible] ৮৫৭) [illegible] ৮৫৮) [illegible] ৮৫৯) [illegible] ৮৬০) [illegible] ৮৬১) [illegible] ৮৬২) [illegible] ৮৬৩) [illegible] ৮৬৪) [illegible] ৮৬৫) [illegible] ৮৬৬) [illegible] ৮৬৭) [illegible] ৮৬৮) [illegible] ৮৬৯) [illegible] ৮৭০) [illegible] ৮৭১) [illegible] ৮৭২) [illegible] ৮৭৩) [illegible] ৮৭৪) [illegible] ৮৭৫) [illegible] ৮৭৬) [illegible] ৮৭৭) [illegible] ৮৭৮) [illegible] ৮৭৯) [illegible] ৮৮০) [illegible] ৮৮১) [illegible] ৮৮২) [illegible] ৮৮৩) [illegible] ৮৮৪) [illegible] ৮৮৫) [illegible] ৮৮৬) [illegible] ৮৮৭) [illegible] ৮৮৮) [illegible] ৮৮৯) [illegible] ৮৯০) [illegible] ৮৯১) [illegible] ৮৯২) [illegible] ৮৯৩) [illegible] ৮৯৪) [illegible] ৮৯৫) [illegible] ৮৯৬) [illegible] ৮৯৭) [illegible] ৮৯৮) [illegible] ৮৯৯) [illegible] ৯০০) [illegible] ৯০১) [illegible] ৯০২) [illegible] ৯০৩) [illegible] ৯০৪) [illegible] ৯০৫) [illegible] ৯০৬) [illegible] ৯০৭) [illegible] ৯০৮) [illegible] ৯০৯) [illegible] ৯১০) [illegible] ৯১১) [illegible] ৯১২) [illegible] ৯১৩) [illegible] ৯১৪) [illegible] ৯১৫) [illegible] ৯১৬) [illegible] ৯১৭) [illegible] ৯১৮) [illegible] ৯১৯) [illegible] ৯২০) [illegible] ৯২১) [illegible] ৯২২) [illegible] ৯২৩) [illegible] ৯২৪) [illegible] ৯২৫) [illegible] ৯২৬) [illegible] ৯২৭) [illegible] ৯২৮) [illegible] ৯২৯) [illegible] ৯৩০) [illegible] ৯৩১) [illegible] ৯৩২) [illegible] ৯৩৩) [illegible] ৯৩৪) [illegible] ৯৩৫) [illegible] ৯৩৬) [illegible] ৯৩৭) [illegible] ৯৩৮) [illegible] ৯৩৯) [illegible] ৯৪০) [illegible] ৯৪১) [illegible] ৯৪২) [illegible] ৯৪৩) [illegible] ৯৪৪) [illegible] ৯৪৫) [illegible] ৯৪৬) [illegible] ৯৪৭) [illegible] ৯৪৮) [illegible] ৯৪৯) [illegible] ৯৫০) [illegible] ৯৫১) [illegible] ৯৫২) [illegible] ৯৫৩) [illegible] ৯৫৪) [illegible] ৯৫৫) [illegible] ৯৫৬) [illegible] ৯৫৭) [illegible] ৯৫৮) [illegible] ৯৫৯) [illegible] ৯৬০) [illegible] ৯৬১) [illegible] ৯৬২) [illegible] ৯৬৩) [illegible] ৯৬৪) [illegible] ৯৬৫) [illegible] ৯৬৬) [illegible] ৯৬৭) [illegible] ৯৬৮) [illegible] ৯৬৯) [illegible] ৯৭০) [illegible] ৯৭১) [illegible] ৯৭২) [illegible] ৯৭৩) [illegible] ৯৭৪) [illegible] ৯৭৫) [illegible] ৯৭৬) [illegible] ৯৭৭) [illegible] ৯৭৮) [illegible] ৯৭৯) [illegible] ৯৮০) [illegible] ৯৮১) [illegible] ৯৮২) [illegible] ৯৮৩) [illegible] ৯৮৪) [illegible] ৯৮৫) [illegible] ৯৮৬) [illegible] ৯৮৭) [illegible] ৯৮৮) [illegible] ৯৮৯) [illegible] ৯৯০) [illegible] ৯৯১) [illegible] ৯৯২) [illegible] ৯৯৩) [illegible] ৯৯৪) [illegible] ৯৯৫) [illegible] ৯৯৬) [illegible] ৯৯৭) [illegible] ৯৯৮) [illegible] ৯৯৯) [illegible] ১০০০) [illegible]

Rajyasri Roy

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

PROJECT REPORT

(Submitted for the Degree of B.Com. Honours in Accounting & Finance under the University of Calcutta)

TITLE OF THE PROJECT:

"SALES & DISTRIBUTION MANAGEMENT"

SUBMITTED BY

Name of the Candidate : SAYANI MALLIK

Name of the College: VIJAYGHARH JYOTISH RAY

Registration Number: 058-1211-0431-19

CU Roll Number: 191058-11-0019

SUPERVISED BY

Name of the Supervisor: KRISHNENDU SEN

Name of the College: VIJAYGHARH JYOTISH RAY

MONTH & YEAR OF SUBMISSION:

JUNE, 2022

Rajyasri Mallick

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

ACKNOWLEDGEMENT

I being a benefited student of Heramba Chandra College, affiliated under the University of Calcutta, would like to take this opportunity to express my profound gratitude and regards to my supervisor, and to the entire Department of Commerce for their exemplary guidance, monitoring and constant encouragement throughout the course of the completion of the project ""SALES & DISTRIBUTION MANAGEMENT".

The guidance given by them time to time shall carry me a long way in the journey of my career on which I am about to embark. I would also like to express my thankfulness to the college and university committee for providing me with the opportunity to work on this project, and for their cordial support, valuable information and guidance, which helped me in completing this task through its various stages.

I am thankful to all the people who willingly responded to the questionnaire and their contribution has been invaluable. This project would not have been completed without their participation. I am grateful for their cooperation during the period of my project. Lastly, I thank to my parents and friends for their constant encouragement without which the project would not have been possible.

Name : SAYANI MALLIK

College : VIJAYGHARH JYOTTISH RAY

Roll No. : 191058-11-0019

Registration No. : 058-1211-0431-19

Vijaygarh Jyotish Ray College

Table of Contents

Vijaygarh Jyotish Ray College

CHAPTER 1: INTRODUICTION

: BACKGROUND OF THE STUDY

: SALES MANAGEMENT:

Sales management is defined as the planning, direction, and control of personal selling including recruiting, selecting, equipping, assigning, routing, supervising, paying, and motivating as these tasks apply to personal sales force.

Sales management originally referred exclusively to the direction of the sales force. Later the term took on broader significance in addition to the management of personal selling.

Sales management specifically contributes to achieve the marketing objectives of a firm. In fact, sales managers set their personal selling objectives and formulate the personal selling policies and strategies.

Vijaygarh Jyotish Ray College

: The Three Key Aspects of Sales Management

There are three “umbrellas” to manage within the sales process:

- Sales Operations
- Sales Strategy
- Sales Analysis

The process will vary from business to business, especially as you work your way down the line, but operations, strategy and analysis are the three key starting or focal points.

: Who Benefits from Sales Management?

Sales management in practice positively affects everyone involved in the sales cycle. The more mature your sales process is, the more the manager adapts and improves it over time, the more likely your team will achieve top performance.

In the same way that we've outlined the three aspects of sales management, there are three key stakeholders involved with the sales management process:

- the sales manager,
- salesperson, and
- customer.

: Key terms [Sales glossary]

- **Activity-based selling:** The theory that you can close more deals by focusing on the activities you can control, such as the number of calls or appointments made, rather than focusing on results, or making a certain amount of money in sales.
- **Close/closing:** Bringing a prospect to a final buying decision.
- **Close ratio:** Number of deals you close compared to the number of deals you have presented.
- **Cold calling:** Getting in contact with a potential customer with no prior contact or relationship in hopes of setting up an appointment of informing them about your product or service.
- **Conversion**: The act of turning a prospect into a customer.
- **Customer relationship management (CRM):** A tool or software to manage your customer relationships and sales pipeline. Often also used as process management software.
- **Deal:** An agreement to meet or take action with a prospect.
- **Demo**: A sales presentation of your product or service.
- **Lead:** Anyone who could potentially be a customer.
- **Marketing:** The act of promoting your product or service.

Vijaygarh Jyotish Ray College

- **Metrics:** A collection of individual and organizational performance indicators and ratios calculated from collected data that describe a company's historical and ongoing sales processes.
- **Product:** Something made to be sold to a consumer.
- **Prospect:** A potential customer or person who may be interested in a company's product or service.
- **Quota**: A fixed share of something that a person or group is entitled to achieve or contribute to.
- **Retention rate:** The percentage of customers who stay.
- **Revenue:** A company's income or earnings.
- **Sales cycle:** The series of predictable phases required to sell a product or a service. Sales cycles can vary greatly among organizations, products and services, and no one sale will be exactly the same.
- **Sales Dashboard:** A method of measuring sales performance from a birds-eye view. A sales dashboard helps measure key metrics, individual team members and sales activities.
- **Sales force:** Division of a business responsible for selling products or services.
- **Sales funnel (or pipeline):** A systematic and visual approach to selling a product or service. The sales pipeline is helpful in showing you exactly where the money is in your sales process.
- **Sales management: T**he process of developing and coordinating a sales team.
- **Sales management planning:** Process of thinking and organizing activities to achieve a desired goal.
- **Sales management process:** Steps taken to attain a company's objectives.
- **Sales management strategy:** A method to bring about a desired outcome.
- **Sales manager:** Someone who's responsible for managing salespeople and overseeing a company's sales process.
- **Sales meeting:** a meeting with the sales team, often to discuss process, products and services, as well as the potential benefits for the buyer.
- **Salesperson:** Someone who typically works directly with customers to inform them and sell a product while providing customer service.
- **Sales reporting:** The documentation of a company's activities.
- **Sales targets**: Objectives or goals for a salespeople or company.
- S**ales velocity:** Time it takes for a new deal to close, from the initial contact.
- **Service:** An action performed to satisfy a customer's need or problem.

Vijaygarh Jyotish Ray College

: What Is Distribution Management?

Distribution management refers to the process of overseeing the movement of goods from supplier or manufacturer to point of sale. It is an overarching term that refers to numerous activities and processes such as packaging, inventory, warehousing, supply chain, and logistics. Distribution management is an important part of the business cycle for distributors and wholesalers. The profit margins of businesses depend on how quickly they can turn over their goods. The more they sell, the more they earn, which means a better future for the business. Having a successful distribution management system is also important for businesses to remain competitive and to keep customers happy.

: Types of Distribution Channels –

- Direct Sale:
- Sale through Retailer:
- Sale through Wholesaler:
- Sale through Agent:
- Intensive, Selective and Exclusive Distribution:

Vijaygarh Jyotish Ray College

: Justification of the study

Sales management includes more than tracking the business you book and providing support for your sales team. It starts with helping develop the right products, setting the right prices and distributing in the right places, and continues with marketing messaging, customer service and other selling efforts, according to Reference for Business. All of these efforts must be coordinated so one doesn't interfere any of the others. Setting plans, monitoring them and tracking results lets you continue to adapt, eliminate weaknesses and take advantage of opportunities.

Improves Product Development

A sales management program includes having your sales staff keep in close touch with customers and watching the competition to determine if your product line is as relevant as it can be. Adding a new product to your line, changing or eliminating features or dropping items from your product mix can all help you maximize your sales and profits. Conduct regular reviews of what you sell to make sure you offer the optimal product or service to generate high sales volumes and profit margins.

Optimizes Distribution

Sales reports not only provide you with information about what's selling and how much you're selling, but where you are making your sales via the relationship between sales and distribution processes. A sales management program evaluates your distribution methods and maximizes their use.

Better Financial Decisions

Some of your best-selling products, in terms of volume, might provide your lowest profit margins, causing a burden on your production and administration departments. Detailed sales reports provide you with information on your overhead and production costs, cost-of-sales expenses and profit margins.

Improves Staff Quality

A sales plan is only as good as the people who use it, and a key part of any sales management program is recruiting, training and managing sales staff, according to Management Study Guide. A good sales manager is able to motivate his sales team. This includes developing their product knowledge, coaching them on calls, improving writing and presentation skills and helping them work their territories effectively.

Vijaygarh Jyotish Ray College

: LITERATURE REVIEW

Sr. No.	Author and year	Objective	Variables	Conclusion
1	Dr. surinder Singh Kundu (September 2013)	To identify the factors affecting the purchase decisions of customers towards the purchase of FMCGs.	Salespeople ,Own experience ,Reference group	The study found that rural buyers perceived that TV commercials, print advertisements and word of mouth plays a significant role for taking the decision to purchase these FMCG.
2.	Gautam, N., and Gangal, V. K. (2011)	To identify the factors affecting the purchase decisions of customers towards the purchase of FMCG.	Quality, size of the product.	The study found that the factors influencing the purchase decision of the respondents, consumers buying are influence the most by the product factor due to quality, durability, made from safe environment and product range but few respondents are not satisfied with the packaging, image and size of the product.
3.	Smith et al,(2002)	To understanding several factors and variables that guide the retailers' attitude toward manufacturer	communication with salesperson	To identify the gaps of manufacturer-retailer relationships this would help to establish a long term profitable belief system in the channel.

Vijaygarh Jyotish Ray College

4.	KOSHY C.J (2014)	The study is analyzes the effectiveness of FMCG distributors in Kerala.	Delivery time Flexibility Availabilityof product	The results from the study indicates that majority of the respondents are satisfied with the services offered by the distributors.
5.	Muhammad Intisar Alam and Afreen Choudhury. (Apr2011)	Factors Affecting Retailers Attitude Towards Manufacturers: A Study on Unilever."	Scheme & discount	The results of the study definitely play a vital role and leave an everlasting impact to be used in decision making by retailers and the entire company as a whole. Moreover this study can be used as a reference for the future studies to understand the perceptions and opinions of the other channel members in addition to retailers as they all.
6.	Schiff man &Kanuk (2004)	The aim of relationship marketing to create strong, lasting relationship with a core group of customers.	Relationship and communicat i on	In this research study trying to explore the efficiency level of Unilever in serving their channel partners, mostly the retailers, to improve the relationship with them by overcoming their deficiencies.

Vijaygarh Jyotish Ray College

: OBJECTIVES OF THE STUDY:

- The main objective of the project is to get the full knowledge of the distribution network of the products of the HUL

- To find out how they are using the distribution network as a key differentiating factor from its competitors.

- To find the preferences of customer and there market knowledge and product information, information about the presence of the rivals of HUL and all the other options they have in the market.

- To find out the needs and wants of the people there. The study was done with reference to many products of HUL and there distribution channel

- To find the ways to use the distribution network as the key differentiating factor from its competitors.

Vijaygarh Jyotish Ray College

: RESEARCH METHODOLOGY

In this section it is explained how the research process has taken place generating potential outcome.

1. Problem Statement

Productivity is critical to the success of any business firm that wants to gain and maintain market share. The organization is in need of an appropriate measure of customer satisfaction that will lead to productivity from its customers. With the help of distribution channel the marketer reach the intended final user of their product.

The present study tried to analyze the effectiveness of distribution channel in Surat it will consider the level of retailer satisfaction which determine the effectiveness of FMCG distributor channel in Surat.

2. Research objective

- To identify the factors affecting the purchase decision towards HUL
- To study effectiveness of small distribution channel
- To study satisfaction level of customer towards small distribution channe

3. Research Design

This research conducted is a descriptive research. This is descriptive in nature because the study is focused on fact finding investigation in a structured form and is based on primary data. Primary data has been used in the form of a questionnaire in order to collect data.

4. Sampling:

Sample size of this survey was 100 respondents. I have collected data from retail shop owners in kolkata & Howrah Area.

5. Data collection:

This research study is based on primary data structured questionnaire has been used.

Vijaygarh Jyotish Ray College

6. Sampling method

The non probability convenience sampling method was use to collect the responses.

7. Survey Tools

A Structured questionnaire was used as tool of data collection.

8. Tools of analysis:

The data tabulated in Ms-excel and SPSS for making analysis easier. In this research SPSS software package version 21.0 was used for analyzing the data collected for the study.

9. Limitation of Study

- The possibility of respondent's responses being biased cannot be ruled out.
- Due to small sample size the study may not be generalized.

RESEARCH METHODOLOGY TABLE

Universe	KOLKATA & HOWRAH AREA
Sample size	100 retail shop owners
Sample unit	Local people of Howrah & Kolkata
Sampling technique Technique	Convenience sampling
Research design	Descriptive
Collection of data	Primary data through Questionnaires and interaction with customers
Secondary data	Internet
Duration	30 Days

Vijaygarh Jyotish Ray College

: LIMITATION OF THE STUDY:

No research is complete without admitting the limitations that was faced while conducting a study which will contribute to present learning. This study too like the others have certain constrains which has been discussed below.

- The study is mainly concentrated on HUL.
- The sample of the size will be limited to time and resources
- The information will be collected valid until there is no any technical change or any innovation
- The result is assuming that respondents have given accurate information.
- Customer Satisfaction is a vast concept. Time is too short to conduct the study in depth and the area of the research was vast.
- As the survey is conducted in limited area there was a problem of limited number of respondents.
- As due to shortage of time, the entire population cannot be covered. So there is a chance of error in sample size.

Vijaygarh Jyotish Ray College

: CHAPTER PLANNING

The report of this study includes the following 4 chapters namely:

CHAPTER - 1: INTRODUCTION

This chapter includes introduction of various topics which is related to this study and it also deals with the fundamentals of the field, definition and important concepts. This chapter also includes brief literature review and the step-wise procedure of the research methodology was adopted to carry out this study and its limitations.

CHAPTER - 3: PROFILES OF INDUSTRIES, COMPANY

This chapter contains the profile of the industry and complete company profile including history, nature of business and services.

CHAPTER - 4: RESULTS, ANALYSIS & DISCUSSIONS

This chapter presents the organized data in the form of tables, graphs and diagrams. The data would then be analyzed using appropriate statistical techniques. And in this chapter the inferences are made from the analysis.

CHAPTER - 5: SUMMARY OF FINDINGS, SUGGESTIONS & CONCLUSION

This chapter presents the summary of the study, the findings during the study, arrived conclusions and acceptable and comprehensive suggestions.

Vijaygarh Jyotish Ray College

CHAPTER 2:

CONCEPTUAL FRAMEWORK

/NATIONAL & INTERNATIONAL

SCENARIO

Vijaygarh Jyotish Ray College

2.1: OVERVIEW

2.1.1: FMCG INDUSTRY:

FMCG industry creates a wide range of job opportunities. This industry is a stable, diverse, challenging and high profile industry providing a wide range of job categories like sales, supply chain, finance, marketing, operations, purchasing, human resources, product development, and general management.

: THE TOP TEN INDIA FMCG BRANDS

The top ten India FMCG brands are:

1. Hindustan Unilever Ltd.
2. ITC (Indian Tobacco Company)
3. Nestlé India
4. GCMMF (AMUL)
5. Dabur India
6. Asian Paints (India)
7. Cadbury India
8. Britannia Industries
9. Procter & Gamble (Hygiene and Health Care)
10. Marico Industries

Out of the above 10 FMCG companies, I have selected Hindustan Unilever Ltd for my study to discuss the sales & distribution Management.

\

Vijaygarh Jyotish Ray College

: NATIONAL SCENARIO

HINDUSTAN UNILEVER LILITED

: ABOUT HINDUSTAN UNILEVER LIMITED (HUL):

Hindustan Unilever Limited (HUL) is an Indian consumer goods company headquartered in Mumbai, India. It is a subsidiary of Unilever, an Anglo-Dutch company. Its products include foods, beverages, cleaning agents, personal care products, water purifiers and other fast-moving consumer goods.

HUL was established in 1931 as Hindustan Vanaspati Manufacturing Co. and following a merger of constituent groups in 1956, it was renamed Hindustan Lever Limited. The company was renamed in June 2007 as Hindustan Unilever Limited.

Hindustan Unilever's corporate headquarters are located at Andheri, Mumbai. The campus is spread over 12.5 acres of land and houses over 1,600 employees. Some of the facilities available for the employees include a convenience store, a food court, an occupational health centre, a gym, a sports & recreation centre and a day care centre.

As of 2019 Hindustan Unilever's portfolio had 35 product brands in 20 categories. The company has 18,000 employees and clocked sales of ₹ 34,619 crores in FY 2020–21.

In December 2018, HUL announced its acquisition of GlaxoSmithkline's India business for $3.8 billion in an all equity merger deal with a 1:4.39 ratio. However the integration of GSK's 3,800 employees remained uncertain as HUL stated there was no clause for retention of employees in the deal. In April 2020, HUL completed its merger with GlaxoSmithKline Consumer Healthcare (GSKCH India) after completing all legal procedures.

Vijaygarh Jyotish Ray College

: Brands and products of HUL

Food

- Annapurna salt and Atta (formerly known as Kissan Annapurna)
- Bru coffee
- Brooke Bond (3 Roses, Taj Mahal, Taaza, Red Label) tea
- Kissan squashes, ketchups, juices and jams
- Lipton ice tea
- Knorr soups & meal makers and soupy noodles
- Kwality Wall's frozen dessert
- Magnum (ice cream)[15]
- Horlicks (Health Drink)[16]

Homecare

- Active Wheel detergent
- Cif Cream Cleaner
- Comfort fabric softeners
- Domex disinfectant/toilet cleaner
- Rin detergents and bleach
- Sunlight detergent and colour care
- Surf Excel detergent and gentle wash
- Vim dishwash
- Magic – Water Saver

Vijaygarh Jyotish Ray College

Personal care

- Axe deodorant and aftershaving lotion and soap
- International breeze
- Brylcreem hair cream and hair gel
- Clear anti-dandruff hair products
- Clinic Plus shampoo and oil
- Close Up toothpaste
- Dove skin cleansing & hair care range: bar, lotions, creams and anti-perspirant deodorants
- Denim shaving products
- Glow and Lovely, skin lightening cream
- Hamam
- Lakmé beauty products and salons
- Lifebuoy soaps and handwash range
- Liril 2000 soap
- Lux soap, body wash and deodorant
- Pears soap, body wash
- Pepsodent toothpaste
- Pond's talcs and creams
- Rexona
- Sunsilk shampoo
- Vaseline petroleum jelly, skin care lotions

Water purifier[edit]

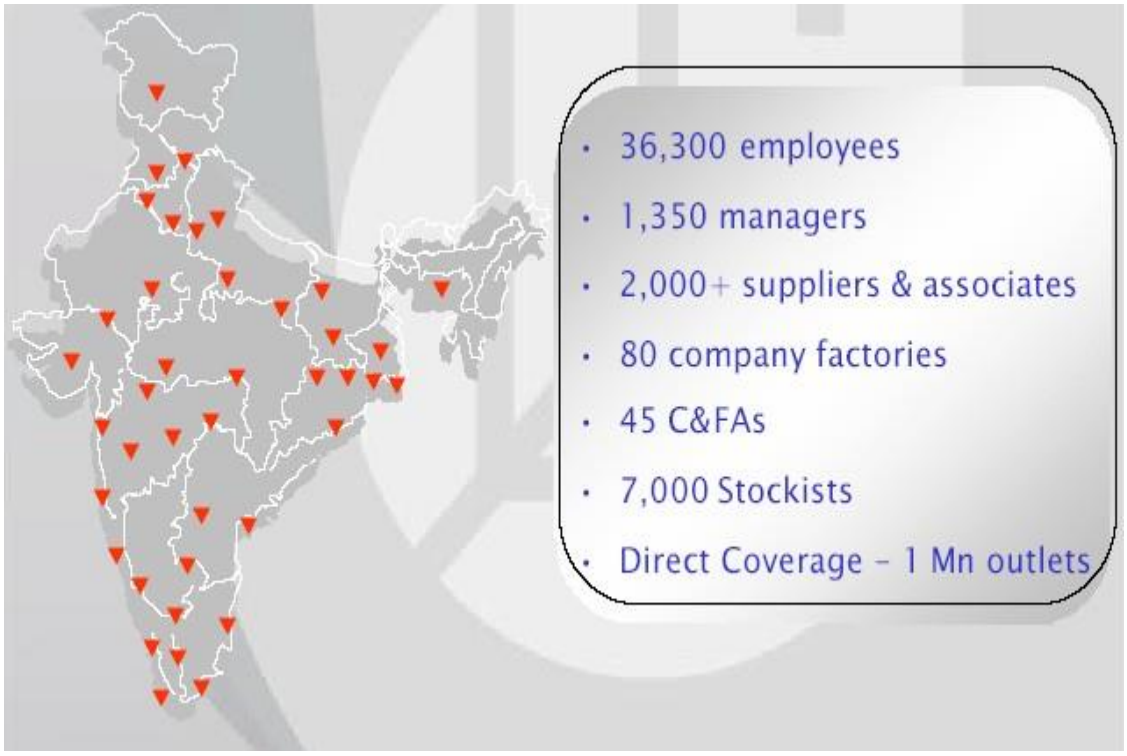
- Pureit

Vijaygarh Jyotish Ray College

: HUL DISTRIBUTION CHANNEL

: HINDUSTAN UNILEVER LIMITED

INDIA'S LARGEST FMCG COMPANY

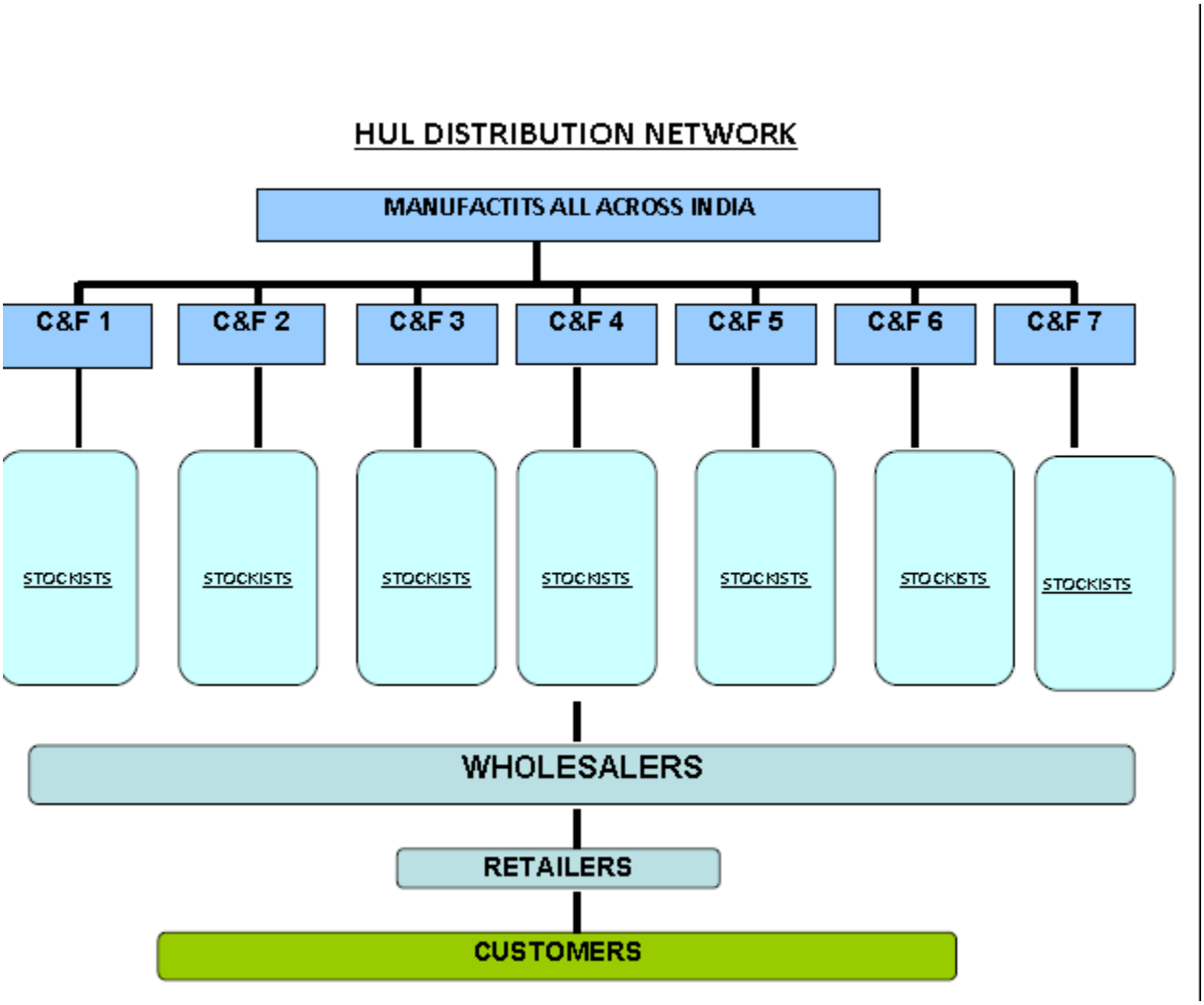


: DISTRIBUTION CHANNEL OF HUL

A Distribution Channel is a set of interdependent organizations (intermediaries) involved in the process of making a product or service available for use or consumption by the consumer or business user. Channel decisions are among the most important decisions that management faces and will directly affect every other marketing decision.

1. Large distribution channel
2. Medium distribution channel
3. Small distribution channel
4. Wholesalers
5. Mini market

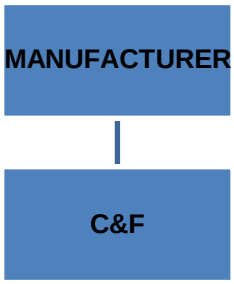
Vijaygarh Jyotish Ray College



This is the whole Distribution Chain of HUL to cover the rural market. The company have remarkably worked upon to make the supply chain from manufacturers to retailers simple with very few number of mediators and jobbers. It has helped them to maintain the transparency in the cycle and also have let them established a prompt delivery process. The products are manufactured in the factories all across India and then is supplied from there to the various Carriage and Forwarding (C&F) units which are 5-10 per state depending on the area they have to cover and are established by the company. These C&F units then supply the products to the various Wholesalers confined to their area only and according to the wholesalers demand. The wholesalers then supply the products to the semi-wholesalers and the retailers as per the volume of their order. Then the semi-wholesalers deliver the products to the retailers and customers.

Vijaygarh Jyotish Ray College

STAGE 1-



In this stage the products reach to the Carriage and Forwarding unit from various manufacturing units established all across India. The volume of the delivery depends upon the quantity required/ordered by the C&F unit. The depot sends the request of the volume of the products to the Head Office, which then order the various factories to supply the products to the mentioned depot. The supply is met within a week. HUL has 45 C&F's with 7000 stockists and 2000+ suppliers and associates to target the market.

STAGE 2-

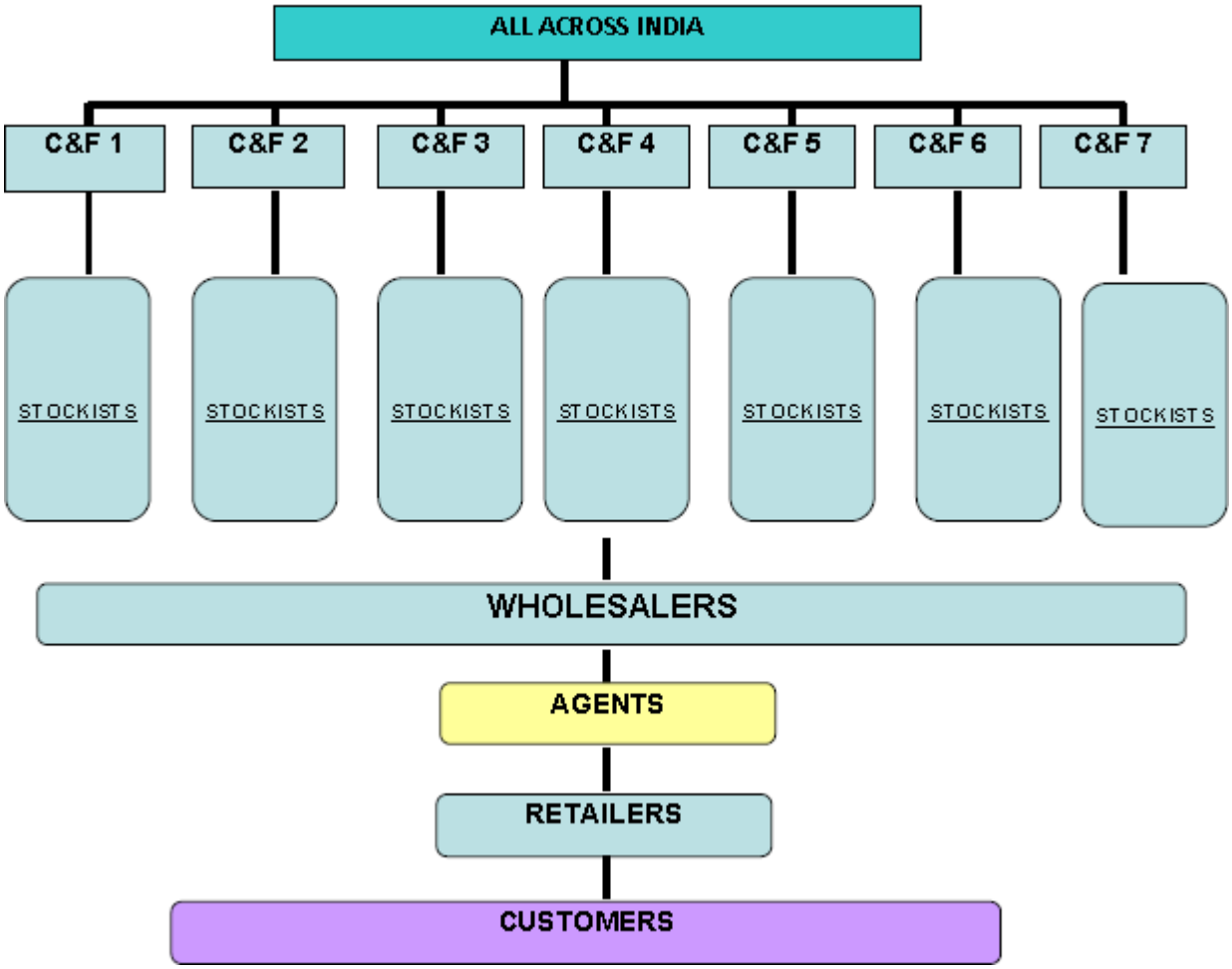
The C&F then supplies the products according to the demand of various wholesalers. Each of the depot cover a region assigned to them.

Each C&F acquires 5-7 trucks and hire 4-5 more trucks to supply products everyday.

They work on the concept of advance payment by DD by the wholesalers and deposit them in the bank which is transferred to the head office.

Vijaygarh Jyotish Ray College

HUL DISTRIBUTION NETWORK IN RURAL MARKET



IN Rural Geographic Regions of India the product which should be made by the manufactures can be delivered through by C & F unit and these unit provide stock in the hand of the merchant wholesalers. Wholesaler delivers the product or stock to the different retailers (who sales stock in breaking bulk) through by agents. The main difference in urban and rural areas distribution networks are the agent who made relation between merchant wholesalers to retailers. Retailers can sell stock in small quantity to the ultimate consumers.

Vijaygarh Jyotish Ray College

CHAPTER 3:

DATA FINDING & ANALYSIS

Vijaygarh Jyotish Ray College

DATA ANALYSIS AN INTERPRETATION

This chapter aims obtain the objective of the study by critically analysing the qualitative data through thoroughly examining the interviewee's responses and beliefs. This has been achieved through evaluating the most relevant responses by the participants. The data has been analysed and discussed by comparing the comments made by the respondents with the literature review keeping in mind the research objective of the study. Thus, the rationale of this analysis is based on the personal answers provided by the respondents.

An appropriately designed questionnaire was used to collect the primary data for the study. The data for 100 respondents was organized systematically in tables and graphs and then was subjected to analysis using appropriate statistical tools. The results of the analysis are presented in the following section in order to assess the customer perception towards online shopping on Nykaa .com in India.

Here for analysing, we are considering two factors. That is:

1. Demographical factors
2. Behavioural factors

Vijaygarh Jyotish Ray College

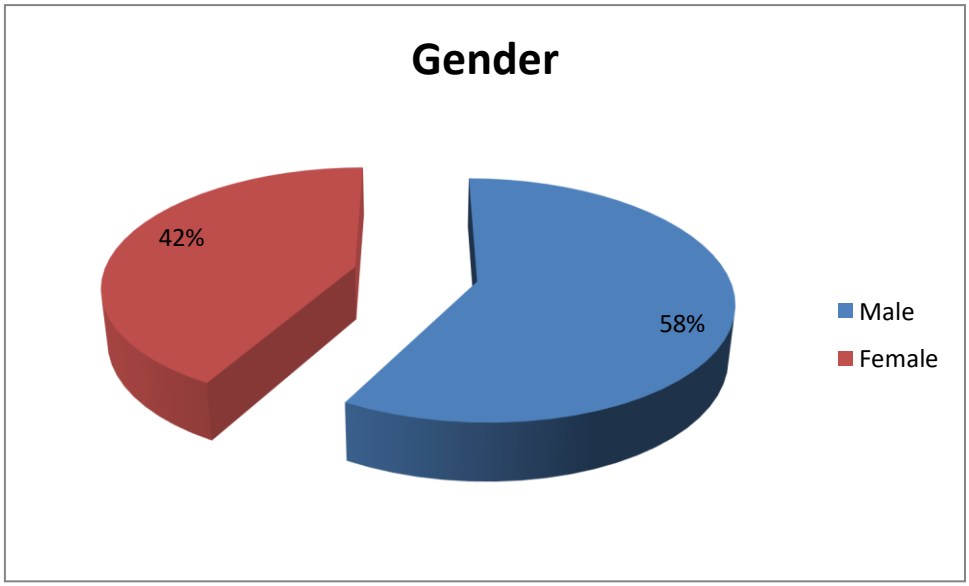
: Demography

: Gender of Respondents:

Table 3.1.1: Gender wise respondents

	Male	Female	**Total**
Responses	58	42	100
Percentage	58	42	100

Graph 3.1.1: Gender wise respondents



Analysis and Interpretation:

According to demography profile, in this study 70 % male and 30% female respondents are part of my target population and they help me to fulfil my questionnaire from different area of Bangalore city. From these groups total respondents are 100. So, according to the survey result,the male respondents are more and can be told that they interested to shop online than female, even though both of them shop online.

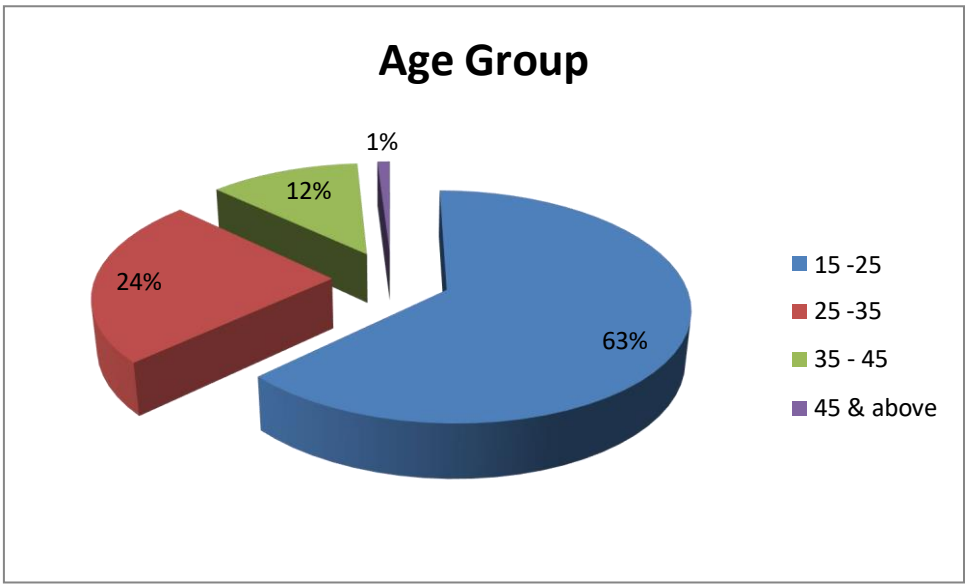
Vijaygarh Jyotish Ray College

: Age Group:

Table 3.1.2: Age wise respondents

	15 -25	25 -35	35 - 45	45 & above	**Total**
No of respondents	63	24	12	1	100
Percentage	63	24	12	1	100

Graph 3.1.2: Age wise respondents



Analysis and Interpretation:

Below figure shows that 63% respondents are between 15-25 years old, 24% respondents are between 25-35 years old, 12% respondents between 35-45 years old, and 1% respondents are between 45&above. Overall result shows that between all of them the respondents who has age limit between 15 to 35 years (63%+24%= 87%) people are more familiar to shop online on my target population.

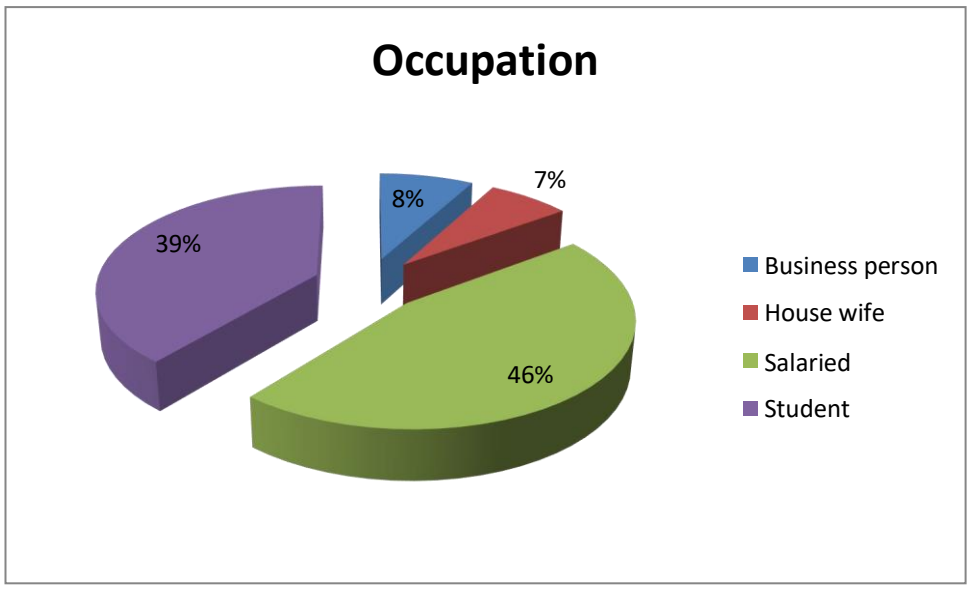
Vijaygarh Jyotish Ray College

: Occupation:

Table 3.1.3: Occupation wise respondents

	Business person	House wife	Salaried	Student	Total
No. of respondents	8	7	46	39	100
Percentage	8	7	46	39	100

Graph 3.1.3: Occupation wise respondents



Analysis and Interpretation:

In this survey, 46% of the respondents are salaried and 39% are students. So they both together made majority of respondent's percentage (85%). 8% are business persons and 7% are House wife. Salaried persons and students will always look for new technologies and new services which make them more comfort.

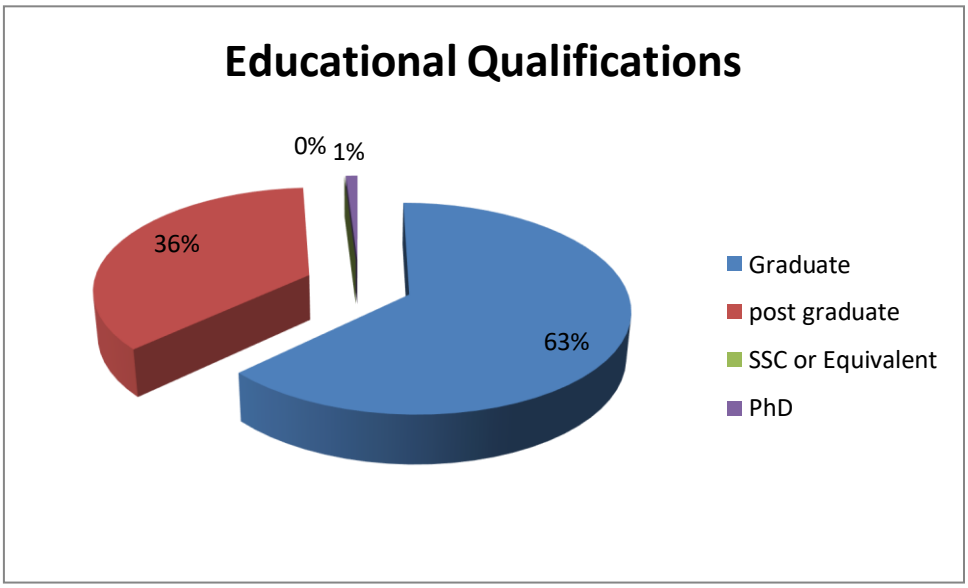
Vijaygarh Jyotish Ray College

: Educational Qualification:

Table 3.1.4: Educational wise respondents

	Graduate	post graduate	SSC or Equivalent	Others (PhD)
Number of respondents	63	36	0	1
Percentage	63	36	0	1

Graph 3.1.4: Educational wise respondents



Analysis and Interpretation:

All of them in this survey are graduate and above qualified peoples only. Among these 63% are graduates, 36% are post graduates and one person is PhD.

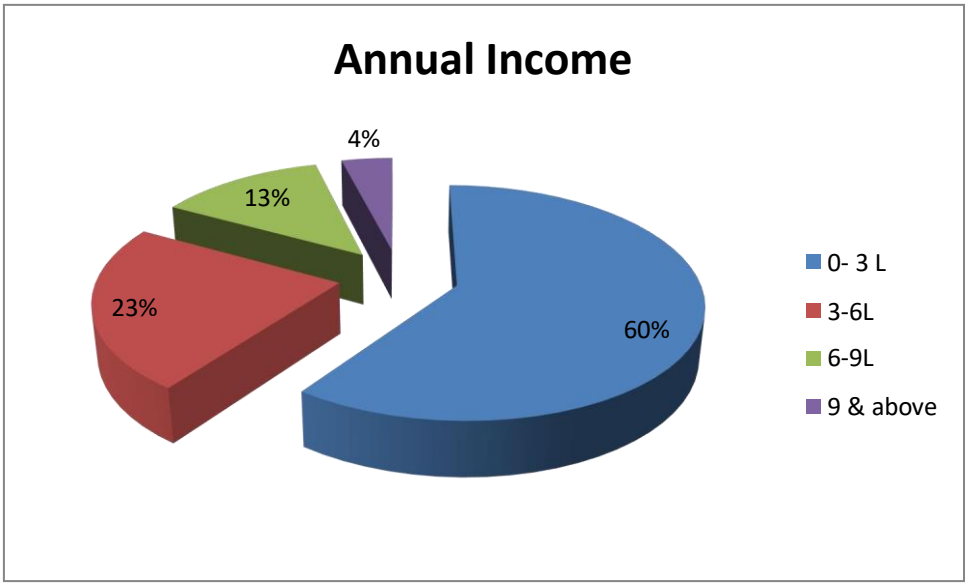
Vijaygarh Jyotish Ray College

: Annual Income:

Table 3.1.5: Income wise respondents

	0- 3 L	3-6L	6-9L	9 & above
Number of respondents	60	23	13	4
Percentage	60	23	13	4

Graph 3.1.5: Income wise respondents



Analysis and Interpretation:

Since 39% of this survey is students most of them are of 0-3L income range, ie 60%. 23% of them are in 3-6Lincome range, 13% in 6-9L and 4% is 9 & above.

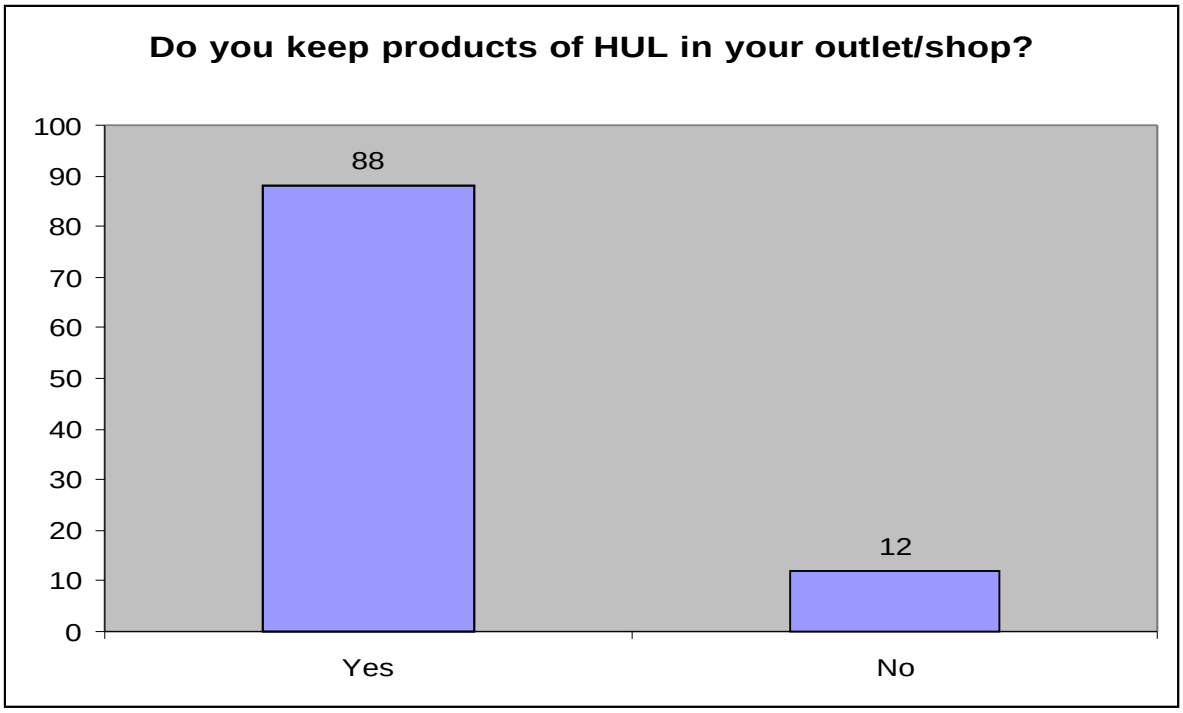
Vijaygarh Jyotish Ray College

: Behavioural factors:

This survey is conducted on those people who do online shopping and are aware of Nykaa . So everyone answered 'yes' for those two questions.

1. Do you keep products of HUL in your outlet/shop?

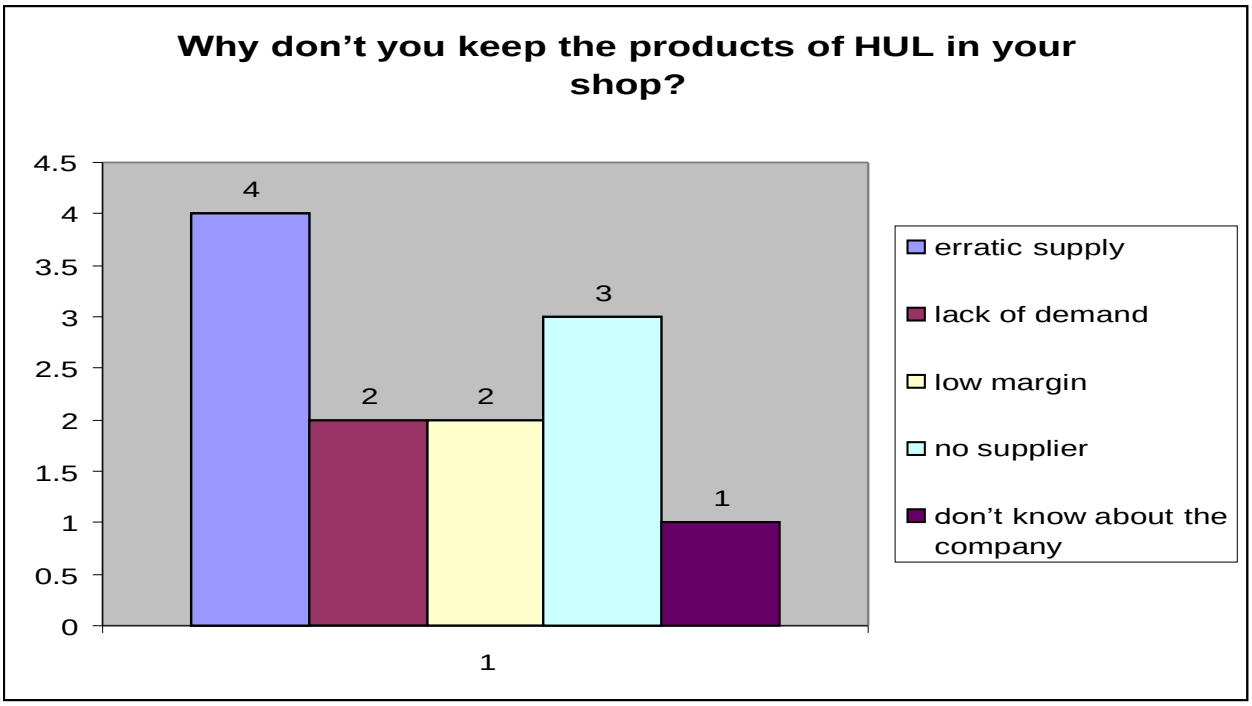
a).Yes 88 b). No 12 .



Vijaygarh Jyotish Ray College

2. Why don't you keep the products of HUL in your shop or why did you stop keeping its products?

a). erratic supply	4
b). lack of demand	2
c). low margin	2
d). no supplier	3
e). don't know about the company	1



Vijaygarh Jyotish Ray College

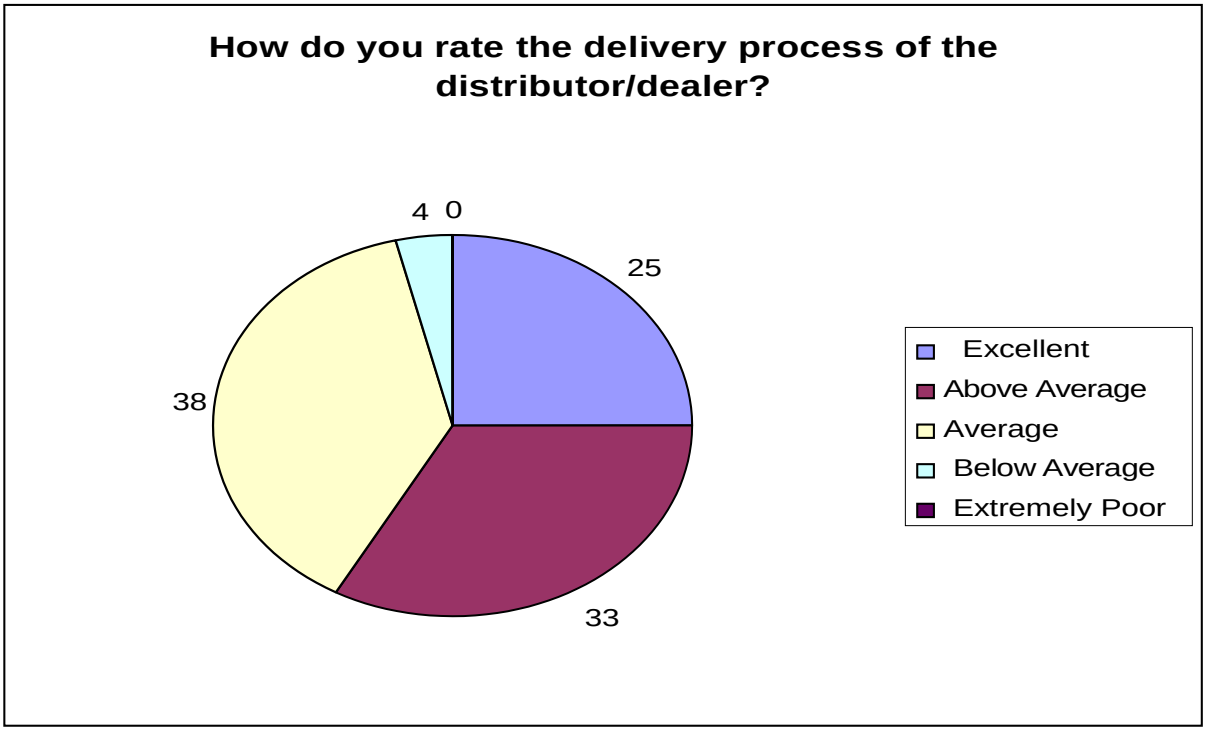
3. From whom do you purchase your product?

1). Distributor	25
2). Dealer/ Agent	40
3). Agency	18
4). Wholesaler	17

Vijaygarh Jyotish Ray College

4. How do you rate the delivery process of the distributor/dealer?

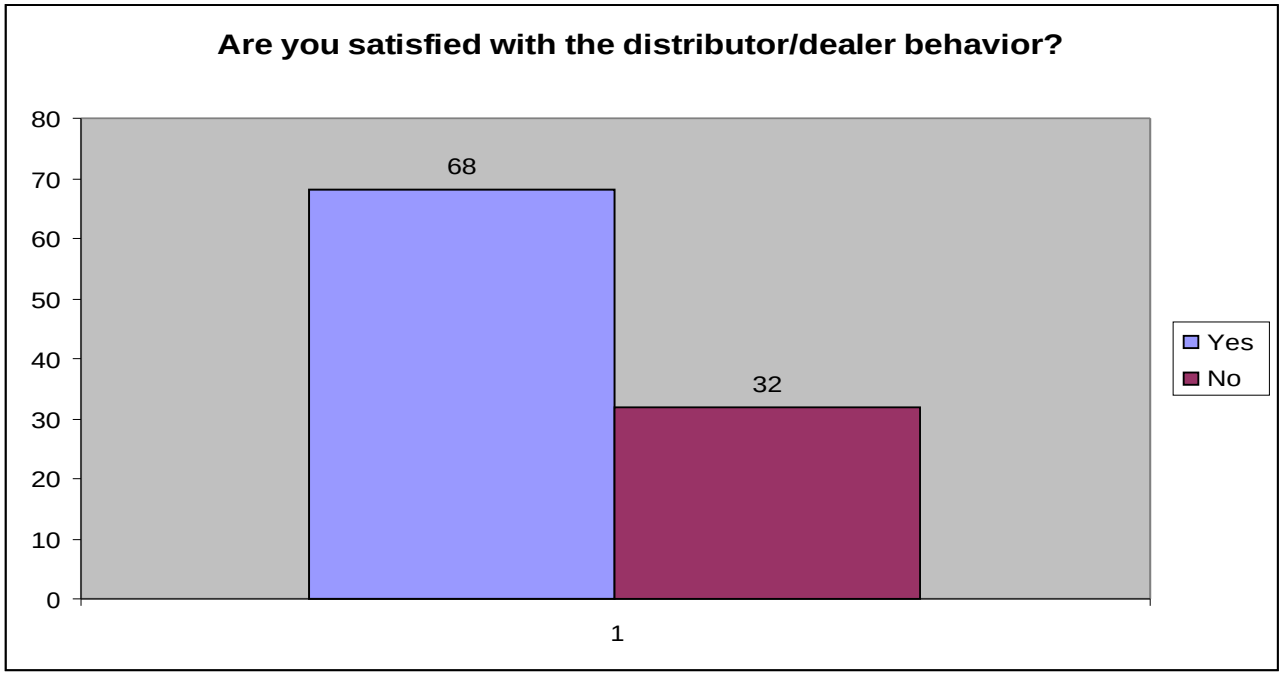
a)	Excellent	25
b)	Above Average	33
c)	Average	38
d)	Below Average	4
e)	Extremely Poor	0



Vijaygarh Jyotish Ray College

5. Are you satisfied with the distributor/dealer behavior?

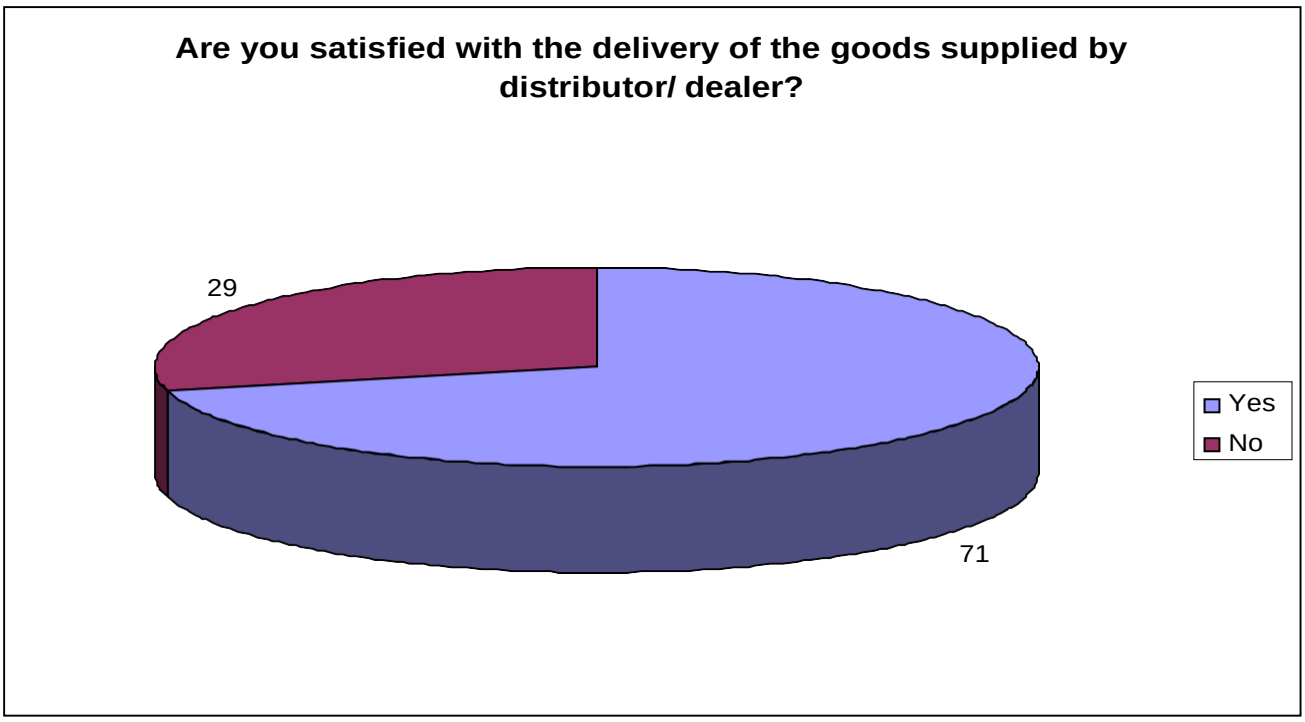
Yes	68
No	32



Vijaygarh Jyotish Ray College

6. Are you satisfied with the delivery of the goods supplied by distributor/ dealer?

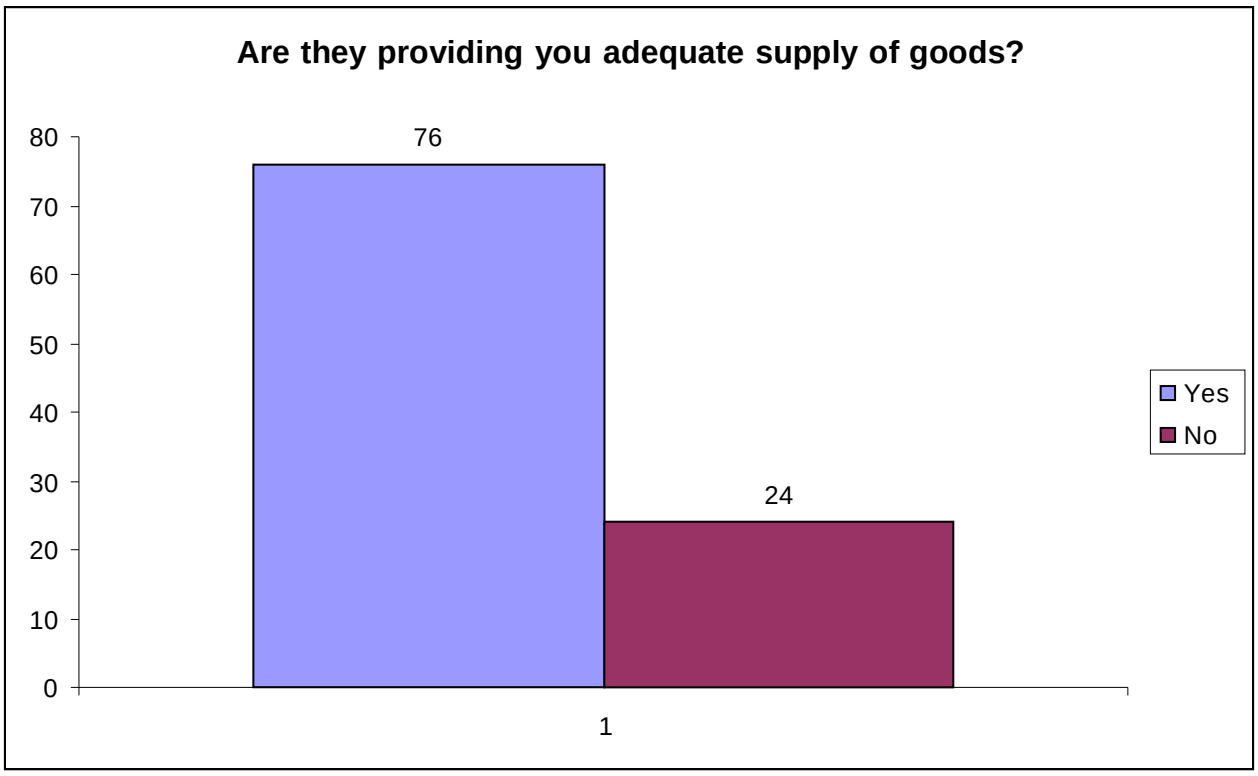
Yes	71
No	29



Vijaygarh Jyotish Ray College

7. Are they providing you adequate supply of goods?

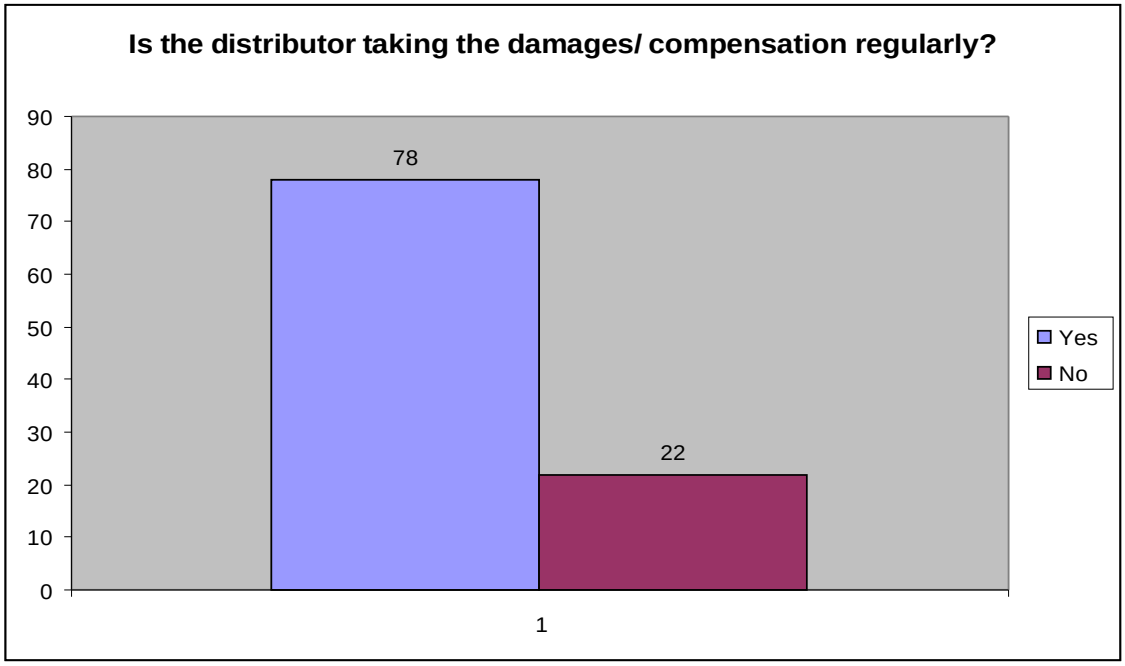
Yes	76
No	24



Vijaygarh Jyotish Ray College

8. Is the distributor taking the damages/ compensation regularly?

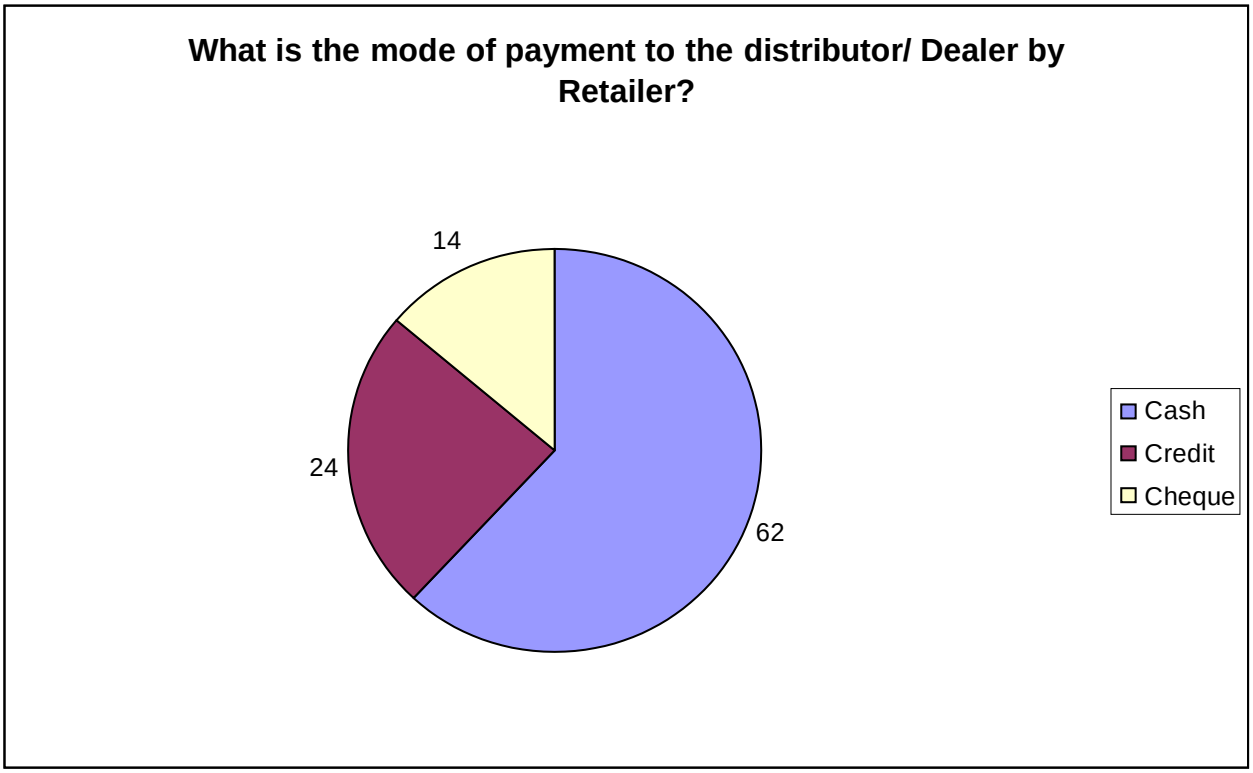
Yes	78
No	22



Vijaygarh Jyotish Ray College

9. What is the mode of payment to the distributor/ Dealer by Retailer?

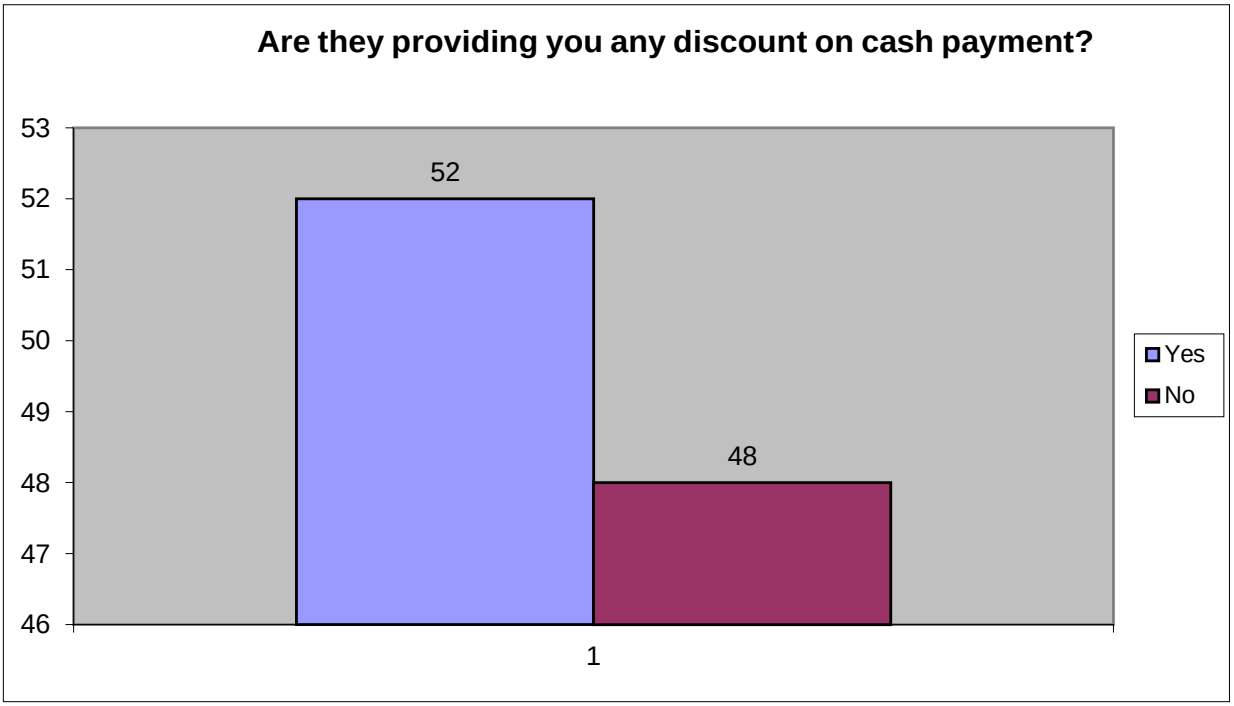
Cash	62
Credit	24
Cheque	14



Vijaygarh Jyotish Ray College

10. Are they providing you any discount on cash payment?

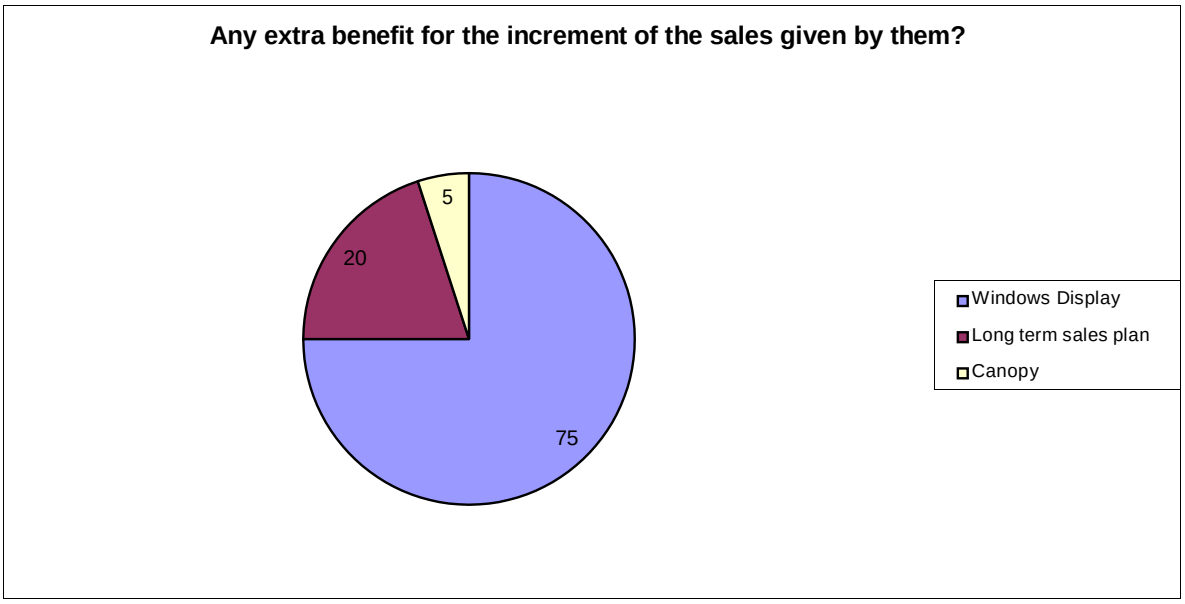
Yes	52
No	48



Vijaygarh Jyotish Ray College

11. Any extra benefit for the increment of the sales given by them?

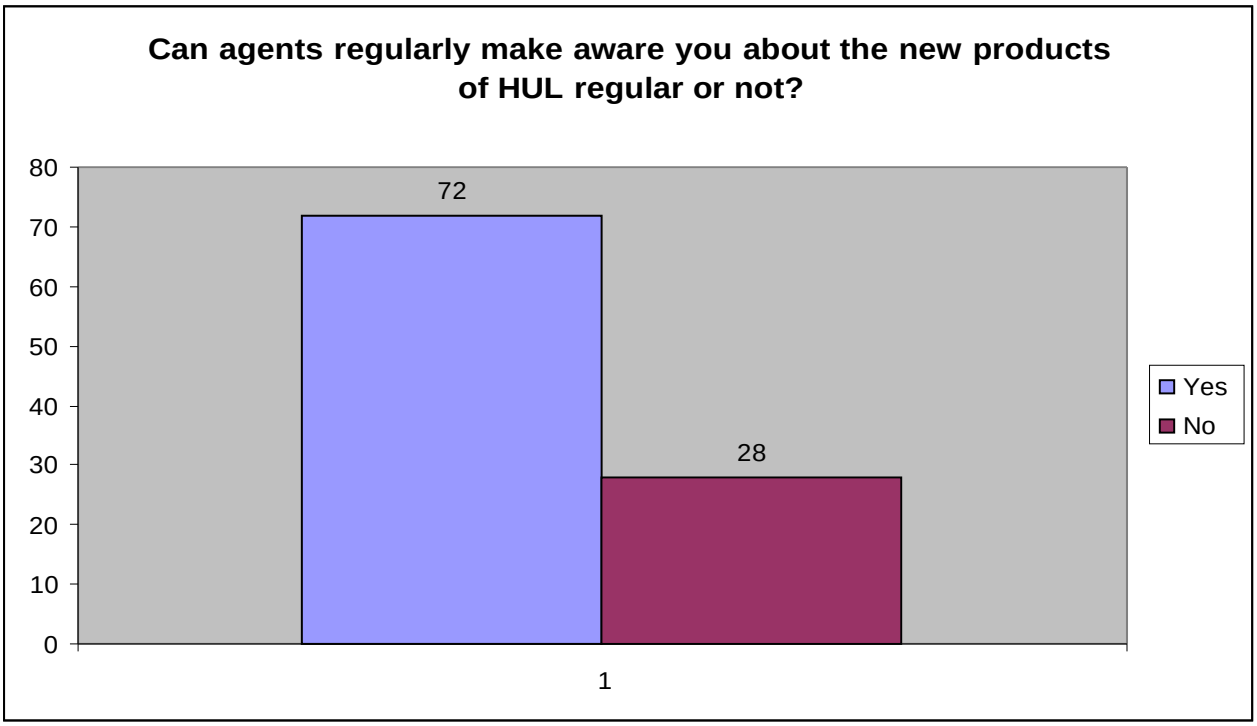
Windows Display	75
Long term sales plan	20
Canopy	5



Vijaygarh Jyotish Ray College

12. Can agents regularly make aware you about the new products of HUL regular or not?

Yes	72
No	28



Vijaygarh Jyotish Ray College

: FINDINGS:

1. 88% of distributer keep HUL product in their outlet.
2. 25% of retailor purchase our product from distribute.
3. 40% of retailor purchase our product from dealer or agents.
4. 18% of retailor purchase our product from agencies.
5. 17% of retailor purchase our product from wholesaler
6. 68% of retailor are satisfied with our distributer or dealer behavior.
7. 71% of retailor satisfied with the delivery of goods supply by distributer /dealer.
8. 76% of dealer providing adequate supply if goods
9. 52% of dealer providing cash discount.
10. 72% of distributer provide information about new launch of HUL products.
11. Majority of 33% of retailor do not keep the stocks due to low margins.

Vijaygarh Jyotish Ray College

CHAPTER 4:

CONCLUSION
&
RECOMMENDATION

Vijaygarh Jyotish Ray College

: CONCLUSION

With the study of the topic we can know about the distributor relationship with the retailers of the largest firm in retail Sector are: HINDUSTAN UNILEVER LIMITED.

With the study it can be easily known how the retailers are been selected HINDUSTAN UNILEVER LIMITED (Super value store) and what the terms and conditions regarding the selection of the retailers and what are the benefits being provided to the retailers and what are the various benefits being provided to the retailers in order to increase their sales.

The company is making there strategies regarding the customer and the various product assortment being provided to the retailers and whether the distributor is helping the retailers in managing the demand of the retailers and also the sales agent behavior and delivery man behavior affects the sale of the retailers as well as the distributor.

So, my study is visualize the distribution channel of the HINDUSTAN UNILEVER LIMITED in rural areas and they say that retailers liked.

Vijaygarh Jyotish Ray College

: RECOMMENDATIONS

- HUL should serve channel partners and customers by replacing damaged products continuously.
- HUL should improve the response time and try to deliver products on time.
- HUL should encourage to the dealer to provide cash discount.
- HUL should increase the quality of packaging of their product to decrease the damages.
- Launching for several sales promotional schemes for existing wholesaler and distributors instance, it has started the 'Vijeta – Rista jeet ka' scheme last year to provide a platform for the wholesaler and HUL to grow the business by earning points and redeem them.

Vijaygarh Jyotish Ray College

BIBLIOGRAPHY

BOOKS:

- Business World
- Economic Times
- The Times of India

JOURNELS AND MAGAZINES:

- C R Kothari (Research Methodology)

- Joe Nyaga. "FACTORS AFFECTING DISTRIBUTION OF FAST MOVING CONSUMER GOODS IN KENYA: A CASE OF EVEREADY EAST AFRICA." International Journal of Social Sciences and Entrepreneurship Vol.1, Issue 12, 2021.

- Muhammad Intisar Alam, and AfreenChoudhury. "Factors Affecting Retailers Attitude Towards Manufacturers: A Study on Unilever." Journal of Economics and Behavioral Studies Vol. 2, No. 4, Pp. 138-150, Apr 2021

WEBSITES:

- www.hul.com
- https://www.ukessays.com/essays/marketing/effectiveness-and-efficiency-of- distribution-channel-in-fmcg-marketing-essay.php?cref=1 http://business.mapsofindia.com/fmcg/
- http://info.shine.com/industry/fmcg/6.html
- http://www.ibef.org/ https://www.pg.com/en_IN/company/pg-india.shtml
- https://www.statista.com/statistics/273236/brand-value-of-the-leading-personal-care- brands-worldwide/
- http://marketrealist.com/2015/05/analyzing-worlds-popular-fmcg-brands/
- http://marketrealist.com/quote-page/cl/
- https://www.researchgate.net/publication/256839769_Customers%27_Perception_towards_the_Fast_Moving_Consumer_Goods_in_Rural_Market_An_Analysis?enrichId=rgreq-1ba1590a-658a-4de0-a9c6-

Vijaygarh Jyotish Ray College

***Annexure-I*A**

SUPERVISOR'S CERTIFICATE

This is to certify that MISS SAYANI MALLIK a student of B.Com. Honours in accounting & finance of VJRC College under the University of Calcutta has worked under my supervision and guidance for his Project Work and prepared a Project Report with the title Sales & Distribution Management which he is submitting, is his genuine and original work to the best of my knowledge.

Name: KRISHNENDU SEN

Designation: PROFESSOR

Name of the College: VIJAYGHARH JYOTISH RAY

Date: JUNE, 2022

Place: Kolkata

Vijaygarh Jyotish Ray College

Annexure-IB

STUDENT'S DECLARATION

I hereby declare that the Project Work with the title "SALES & DISTRIBUTION MANAGEMENT" submitted by me for the partial fulfilment of the degree of B.Com. Honours in Accounts & finance under the University of Calcutta is my original workand has not been submitted earlier to any other University/Institution for the fulfilment of therequirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However, extracts of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Signature:

Name: SAYANI MALLICK

CU Registration Number: 058-1211-0431-19

CU Roll number: 191058-11-0019

Place: Kolkata

Date: June, 2022

Vijaygarh Jyotish Ray College

Annexure-IC

QUESTIONNAIRE

Hello people, I am MISS SAYANI MALLICK , a B.Com (H) 6th Semester student of VRJC College, kolkata". This google form is a part of my research project. It would be really helpful if you just spare out 5 minutes to take a part in this surveyand share your experience on the "Sales & Distribution Management"

Your response will be highly appreciated.

*Required

PART A

1. Name: MISS SAYANI MALLICK -

2. Age

(a) Between 20* ☐

(b) Between 20 – 40 years ☐

(c) More than 40 Years ☐

3. Qualification

(a) 10th ☐

(b) 12th ☐

(b) Graduate* ☐

(e) Post Graduate ☐

4. GENDER

(a) Male ☐

(b) Female* ☐

5. OCCUPATION:

(a) Working ☐

(b) Self Employed ☐

(c) Studying* ☐

Vijaygarh Jyotish Ray College

PART B

1. Do you keep products of HUL in your outlet/shop?
   - Yes*
   - No

2. Why don't you keep the products of HUL in your shop or why did you stop keeping its products?
   - erratic supply
   - lack of demand*
   - low margin
   - no supplier
   - don't know about the company

3. From whom do you purchase your product?
   - Distributor
   - Dealer/ Agent*
   - Agency
   - Wholesaler

4. How do you rate the delivery process of the distributor/dealer?
   - Excellent
   - Above Average*
   - Average
   - Below Average
   - Extremely Poor

5. Are you satisfied with the distributor/dealer behavior?
   - Yes*
   - No

Vijaygarh Jyotish Ray College

6. Are you satisfied with the delivery of the goods supplied by distributor/ dealer?
   - Yes*
   - No

7. Are they providing you adequate supply of goods?
   - Yes*
   - No

8. Is the distributor taking the damages/ compensation regularly?
   - Yes
   - No*

9. What is the mode of payment to the distributor/ Dealer by Retailer?
   - Cash*
   - Credit*
   - Cheque

10. Are they providing you any discount on cash payment?
   - Yes*
   - No

11. Any extra benefit for the increment of the sales given by them?
   - Windows Display
   - Long term sales plan*
   - Canopy

12. Can agents regularly make aware you about the new products of HUL regular or not?
   - Yes
   - No*

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Vijaygarh Jyotish Ray College

PROJECT REPORT

(submitted for the Degree of B. COM Honours in Accounting & Finance under

The University of Calcutta)

Title of the Project

FINANCIAL STATEMENT ANALYSIS OF BOAT-LIFESTYLE LTD.

SUBMITTED BY

- *Name of the candidate:- Sumit Paul*
- *Registration No:- 058-1111-0443-19*
- *University Roll No;- 191058-21-0056*
- *Name of the college:- Vijoygarh Jyotish Ray college*
- *College Roll No:- 20190645*

Supervised By

- *Name of the supervisor:- Krishnendu Sen.*
- *Designation:- Faculty of Commerce Department.*
- *Name of the College:- Vijoygarh Jyotish Ray College.*

Month & Year of Submission

April, 2022

Vijaygarh Jyotish Ray College

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032

Acknowledgement

I would like to express my gratitude and appreciation to all those who gave me the possibility to complete the report. Special thanks to my supervisor Krishnendu Sen sir whose help, stimulating suggestions and encouragement helped me in all time of fabrication process and in writing this report. I also sincerely thanks the college library for providing me the books and journals that I need the most.

I would also like to express my thankfulness to the college and university committee for providing me with the opportunity to work on this project, and for their cordial support, valuable information and guidance, which helped me in completing this task through its various stages.

SUMIT PAUL

VIJAYGARH JYOTISH RAY COLLEGE

ROLL NO. 191058-21-0056

REGISTRATION NO. 058-1111-0443-19

Vijaygarh Jyotish Ray College

Annexure-IA

Supervisor's Certificate

This is to certify that Mr. Sumit Paul a student of B. COM Honours in Accounting & Finance of Vijoygarh Jyotish Ray college under the University of Calcutta has worked under my supervision and guidance for his project work and prepared a project report with the title "FINANCIAL STATEMENT ANALYSIS OF BOAT-LIFESTYLE LTD." Which he is submitting, his genuine and original work to the best of my knowledge.

Place: Kolkata **Signature:**

Date: 27.04.22 **Name: Krishnenedu Sen.**

Designation: Faculty of Commerce Departmen.

Name of the College: Vijoygarh Jyotish Ray College.

Vijaygarh Jyotish Ray College

Annexure-IB

Student's Declaration

I hereby declare that the project work with the title " **FINANCIAL STATEMENT ANALYSIS OF BOAT-LIFESTYLE LTD."**

Submitted by me for the partial fulfillment of the degree of B.COM Honours in Accounting & Finance in Business under the University of Calcutta is my original work and has not been submitted earlier to any other university/Institution for the fulfillment of the requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However extracts of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Place: Kolkata

Date: 27.04.22

Signature:

Name: Sumit Paul.

Address: 10/2, Taramoni Ghat Road.

Registration No: 058-1111-0443-19

Vijaygarh Jyotish Ray College

Table of Content

Vijaygarh Jyotish Ray College

CHAPTER-1

INTRODUCTION

Vijaygarh Jyotish Ray College

1.1 Background of the study:

Financial statement analysis is the process of examining a company's performance in the context of its industry and economic environment In order to arrive at a decision and recommendation. Often, the decision and recommendations addressed by financial analysts pertain to providing capital to companies specifically, whether to invest in the company's debt or equity securities and at what price. An investor in equity securities is an owner with a residual interest in the company and is concerned about the company's ability to pay dividends and the likelihood that its share price will increase.

For understanding the profitability of the company I took ratio analysis of the company.

Analysis means establishing a meaningful relationship between various items of the two financial statements with each other in such a way that a conclusion is drawn.

Ratio is a mathematical term that measures the relationship between two figures or groups of figures which are related to each other. It can be expressed a pure ratio, percentage, or as a rate ratio allow for better comparison through times or between companies.

Ratio Analysis is a procedure that individuals use to determine a company's financial condition and well-being. Through this process accounts learn about a company's ability to make profits, and its efficiency in business operations. In addition, investor can also gather data on liquidity of a company's assets to meet its working capital requirement.

Vijaygarh Jyotish Ray College

1.2 Literature Review:

- **Beaver w.**
  "Financial Ratio Analysis", Handbook of Modern Accounting, ends Davidson S. and Weil, R 2nd McGraw-Hill, 1977.
  Financial ratios are widely used for financial evaluation modeling purpose both by practitioners and researches. The firm involves many interested parties, like the owners, management, personnel, customers, suppliers, competitors, and regulatory agencies. Practitioners use financial ratios to forecast the future success of the company.

- **Timo Salmi and Teppo Martikainen:**
  "A Review of the Theoretical and Empirical Basis of Financial Ratio Analysis, 1994"
  The research on classifying financial ratios into parsimonious sets can be in our opinion best characterized as the following trends: pragmatically empiricism, deductive approach, inductive approach, and confirmatory approach. The review shows that the number essential financial ratios often can be reduced to about 4-7 essential ratios.

- **Martin s. Fridson, CFA and Fernando Alvarez:**
  "Ratio Analysis: A Practitioner's Guide, 2011"
  From the above literature the author establish the focus of review about the nature of Financial Reporting. The purpose of financial reporting is to obtain cheap capital. Simply stated, the lower the interest rate at which a corporation can borrow or the higher price at which it can sell stock to new investors, the greater the wealth of its shareholders. From the standpoint, the best kind of financial statement is not one that represents the corporation's condition most fully and most fairly, but rather one that that produces the highest possible credit rating and price-earnings multiple.

Vijaygarh Jyotish Ray College

1.3 Objective of the study

The objective of the study is the comparative ratio of India's one of the most fastest growing earphone sand smart wearable manufacturing company i.e. Boat-Lifestyle Ltd.

1. To compare the performance of the company in different years.
2. To provide information of the company in respect of the liquidity, profitability, use of assets and capital structure.
3. To compare among the other companies in this similar field.
4. To use of debt finance long term solvency of the firm by using Ratio Analysis.

1.4 Limitations of the study

The study is conducted on considering the following limitation-

1. The study is based on the secondary data provided in the financial statements.
2. There may be some fractional differences in the calculated ratios.
3. Change in price level will affect the comparability of the ratios between two financial periods.
4. Changes in external environment will affect the comparison.
5. Due to lack of availability of information all purchases and sales are considered to be made on credit for calculation purpose.

Vijaygarh Jyotish Ray College

1.5 Research Methodology

Successful research conduction requires proper planning and execution. While there are multiple reasons and aspects behind a successful research completion, choice of best research completion, choice of best research methodology is one of the most difficult and confusing decisions. The procedure by which research ago about their work of describing, explaining and predictions phenomenon is called methodology. Methods comprises the procedures used for collecting and evaluating data.

Data collection is an important step of any kind of projects and success of it will be largely depend on how accurately you will able to collect the data and how much time, money required to collect the necessary data.

There are two types of Data Collection Methods:

- **Primary data:** the data which is collected first hand and for first time, which is original in nature. It can be collected through personal interview, questionnaire etc.
- **Secondary data**: the data which is collected from records, annual reports, journal, books, website is known as secondary data.

My project based on the analysis of secondary data of the company which includes information of the company annual reports, financial statements and other information from the data available on internet.

1.6 Chapter planning:-

This study is divided into 4 chapters with reference:

Chapter 1- Introduction

Chapter 2- Conceptual framework

Chapter 3- Data collection and Analysis

Chapter 4- Conclusion and Recommendation

Vijaygarh Jyotish Ray College

CHAPTER-2

CONCEPTUAL FRAMEWORK

Vijaygarh Jyotish Ray College

2.1 Introduction:

A financial statement is an organized collection of data according to logical and consistent accounting procedure. Its purpose to convey an understanding of some financial aspect of a business. It may show a position at a moment of time as in the case of a balance sheet, or may reveal a series of activities over a given period of time, as in the case of an income statement.

Overall, a central focus of financial analysis is evaluating the company's ability to earn a return on its capital that is at least equal to the cost of the capital, to profitability grow its operations, and to generate enough cash to meet obligations and pursue opportunities.

2.2 Features of Financial Statement Analysis:

I. Periodical review of the status of investment and progress made by the Management.
II. Facts recorded on the basis of accounting conventions and exercise of personal judgments.
III. Integrity and competence of accountants who prepare them have a vital bearing on the ultimate results furnished.
IV. Reliability, authenticity of the analysis would be just as much as that of the Financial statements.
V. Financial statements are always expressed in monetary term. They ignore qualitative aspects. In other words, the non monetary events do not come under the scope of financial statements.
VI. Financial statements are always prepared for a certain period of time. They generally cover the period of one year
VII. Financial statements are historical in nature since they always present the past performance.

Vijaygarh Jyotish Ray College

2.3 Necessity of Financial Statement Analysis:

We can determine the profitability and the financial health of the business by using:

1) G.P Ratio
2) N.P Ratio
3) Return On Investment
4) Operating Profit Ratio
5) Earnings Per share
6) Dividend Per Share

- **Holding of a Share:** Equity shareholder are the owners of the company. They may take decision whether they continue with the holdings of the company's or sell them out. The financial statement analysis is important as it provides meaningful information to the shareholders in taking such decision.
- **Reduces uncertainty:** Financial statements reduces our reliance on hunches and also diminishes uncertainty in decision making.
- **Extension of credit:** the creditors, banks and the other financial institutions are the providers of loan to the company. Therefore, they may take decisions as to whether they have to extend their loans to the company and demand for higher interest or not. The financial statements analysis provides important information to them for their purpose.
- **Diagnostic tools:** Financial statement is a diagnostic tool in ascertaining financing, investing, and operating activities and is a managerial and other business decision.

Vijaygarh Jyotish Ray College

2.4 Objectives:

- **Assessment of Past Performance and Current Position:** Promoters /owners want to know whether the company is heading in the right direction or they are lagging in their targets, which they have planned in the past. Regular recording of financial transactions helps them to understand their financial position and helps them analyze prospects in a better way.
- **Eliminating Discrepancies:** Recording of day to day transactions i.e. sales and purchase, expenses or incomes, or other statements, help them understand where they need to improve and make quick decisions in case of any discrepancies.
- **Future Decision Making:** Quarterly statements like sales book, purchase, trading a/c, or manufacturing a/c helps them in executing their plans in a better way. This provides them the opportunities to make future decisions with reliable information. Analyzing financial statements on a short term basis helps the organization to make efficient decisions.
- **Loan Decisions by Financial Institutions:** Financial analysis helps the financial institutions, loan agencies & banks to decide whether a loan can be given to the company or not. It helps them in determining the credit risk, deciding the terms and conditions of a loan if sanctioned, interest rate, maturity date etc.
- **Minimize the Chances of Fraud:** This is not the main objective of the analyzi8ng transactions but the one which cannot be neglected. Often we come across the news that he employee cheated his boss, which lead to huge losses for the company. Analyzing the statements will make sure that the employee will be aware that the management is aware of everything that is happening in the company and also if any suspicion arises on any financial entry, management can have a look into the matter and will be able to solve it without incurring extra losses.

Vijaygarh Jyotish Ray College

2.5 Advantages of Financial Statement Analysis:

- Financial statement analysis evaluates the past performance of business such as sales, cash flows, income, return on investment etc. by using different techniques like trend analysis, vertical analysis, ratio analysis etc.
- Financial statement analysis indicates the current financial position of the business in terms of profitability and operational efficiency.
- Financial analysis provides the data of past and current financial position of the business. These data and information are the bases to predict future earnings and growth rate of the business.
- Financial stamen analysis shows accurate financial position and profitability of the business. So, it helps to determine tax liabilities of the company.
- Financial statement analysis helps the bankers to make credit decisions by providing up-to-date information regarding profitability, solvency, liquidity and efficiency of the business firm.

2.6 Limitations of Financial Statement Analysis:

- **Problem in comparability:** the size of business concern is varying according to the volume of transactions. Hence, the figures of different financial statements lose the characteristics of comparability.
- **Various Methods of Accounting:** the closing stock of raw material is valued at purchase cost. The closing stock of finished goods is valued at market price or cost price whichever less. In general, the closing stock is valued at cost price or market price whichever is less. So an analyst should keep in view these points while making analysis and interpretation otherwise the results will be misleading.
- **Change in Accounting Methods:** there must be uniform accounting policies and methods for number of years. If there are frequent changes, the figures of different periods will be different and incomparable. In such a case, the analysis has no valued and meaning.

  Changes in the value of Money: the purchasing power of money is reduced from one year to subsequent year due to inflation. It creates

Vijaygarh Jyotish Ray College

Problems in comparative study of financial statements of different years.

2.7 Tools and Techniques of Financial Statement Analysis:

- **Comparative statements**- comparative statements are statements of financial position of a business at different periods. These statements help determining the profitability of the business by comparing financial data from two or more accounting period.
- **Common Size Statements**- common size statement is a form of analysis and interpretation of the financial statement. It is also known as vertical analysis. This method analyses financial statements by taking into consideration each of the line items as a percentage of the base amount for that particular accounting period.
- **Fund Flow Analysis-** Fund flow analysis deals with detailed sources and application of funds of the business concern for a specific period. It indicates where funds come from and how they are used during the period under review. It highlights the changes in the financial structure of the company.
- **Cash Flow Analysis-** In financial accounting a cash flow statement is a financial statement that shows how changes in balance sheet accounts and income effect on cash and cash equivalent. It helps in assessing the liquidity of the enterprise and in evaluating the opening investments & financial decision.
- **Ratio Analysis**- Ratio analysis is referred to as the study or analysis of the line items present in the financial statements of the company. It can be used to check various factors of a business such as profitability, liquidity, solvency and efficiency of the company

2.8 Users of the Financial Statement Analysis-

- **Creditors**- Anyone who has lent funds to a company is interested in its ability to pay back the debt, and so will focus on various cash flow measures.

Vijaygarh Jyotish Ray College

- **Investors**- Investors are the owners of the company they would like to understand keep update with the financial performance of the company. They would like to make the decision based on the financial statement whether they need to keep invested or move out from the company based on its performance.
- **Lenders**- Lenders of funds such as banks and other financial institutions are interested in the company's ability to pay liabilities upon maturity.
- **Customers**- when there is a long involvement or contract between the company and its customers, the customers become interested in the company's ability to continue its existence and maintain stability of operations. This need is also heightened in cases where the customers depend upon the entity.
- **Regulatory Authority**- If a company is publicly held, its financial statements are examined by the Securities and Exchange Commission to see if its statements conform to the various accounting standards and the rules of the Securities and Exchange Commission.
- **Government and Government Agencies**- Government agencies like Income-Tax department, Sales Tax department would like to go through the company's financial statements to keep a check if the company paid appropriate taxes. They would like to do future tax predictions based on the performance of the company and industry practice.

Vijaygarh Jyotish Ray College

CHAPTER-3

DATA COLLECTION & ANALYSIS

Vijaygarh Jyotish Ray College

Corporate profile of Boat-Lifestyle Ltd.

BoAt is an India-based consumer electronics brand established in 2015 that markets earphones, headphones, stereos, travel chargers and premium rugged cables. Imagine Marketing Services Private Ltd. Which does business as BoAt, was incorporated in November 2013 by co-founders Sameer Ashok Mehta and Aman Gupta.

BoAt promotes its products through a combination of influencer marketing and brand tie-ins with sports teams and public events. BoAt calls its brand influencers "BoAtheads." Its brand influencers include Indian singers like Neha kakkar and rapper Naved Shaikh, as well as athletes like cricketers Hardik Pandeya, K L Rahul, and Shreyas Iyer among others. The company has done brand tie-ins with sports franchises like cricket teams Chennai Super Kings, Mumbai Indians and this year it tie-ups with Royal Challengers Bangalore. BoAt ha co-branded its audio devices with music events like Sunburn Festivals and other large scale events like the Lakme Fashion week.

Recently BoAt is going to list in retail share market. BoAt is about to issue 2000cr in market, among this issue size Rs900 crores are fresh issue and an offer for sale of Rs 1100 crores.

Vijaygarh Jyotish Ray College

STATEMENT OF PROFIT & LOSS	Mar-18	Mar-19	Mar-20	Mar-21
Revenue from operations	1,06,40,87,720	2,39,44,01,482	7,00,43,83,791	15,11,68,99,635
other income	1,22,03,152	1,30,37,562	3,69,14,314	19,57,99,135
Total Revenue(A)	1,07,62,90,872	2,40,74,39,044	7,04,12,98,105	15,31,26,98,770
Expenses				
Purchase of stock-in-trade	75,92,87,992	2,06,91,56,986	5,00,20,74,064	12,85,37,33,313
(Increase)/Decrease in Stock-in-trade	78,86,564	(26,95,52,170)	(47,66,66,220)	(2,11,33,67,680)
Employee benefit expenses	13,14,36,235	13,46,19,494	6,33,97,535	14,30,86,989
Finance cost	92,68,152	1,88,51,585	8,51,70,614	15,54,69,026
Depreciation & Amortisation expenses	2,12,802	16,97,927	31,80,099	1,05,40,083
other expenses	8,53,37,258	32,87,01,168	1,69,85,19,993	3,55,82,90,401
Total expenses(B)	99,34,29,003	2,28,34,74,990	6,37,56,76,085	14207752132
Profit before tax(A-B)	8,28,61,869	12,39,64,054	66,56,22,020	1,10,49,46,638
Tax Expenses:				
Current Tax	2,31,00,000	3,67,60,572	18,72,76,534	32,51,57,631
Deffered Tax	11,242	(3,04,971)	(1,68,81,881)	(16,56,847)
Short/(excess) provision of tax for earlier years	(5,658)	2,12,870	-	21,71,298
Profit for the year	5,97,56,285	8,72,95,583	49,52,27,367	77,92,74,556
Earnings per equity share				
Basic earnings per equity share(Rs.)	1,195	1,746	9,905	15,739
Diluted earnings per equity share(Rs.)	1,195	1,625	8,982	13,361
(Nominal value Rs 10 per share)				

Vijaygarh Jyotish Ray College

BALANCE SHEET	Mar-18	Mar-19	Mar-20	Mar-21
EQUITY & LIABILITIES				
1.Shareholder's Fund				
share capital	5,00,000	5,51,090	5,51,090	9,35,43,750
Reserve & Surplus	8,36,85,256	38,09,30,178	87,74,53,454	4,56,94,64,933
2.Non-Current Liabilities				
Long-term borrowings	-	-	-	-
Deferred tax liabilities	33,402	-	-	20,21,890
Long-term Provision	-	2,57,654	7,93,328	-
3.Current Liabilities				
Short-term borrowings	7,66,60,329	14,48,56,436	22,19,89,848	35,65,04,509
Trade payables	2,11,54,138	14,00,41,540	28,79,66,430	98,68,94,837
Other current liabilities	11,91,69,892	16,37,98,204	21,67,66,940	39,15,45,982
short-term provision	-	1,14,46,910	27,16,91,381	30,39,98,916
TOTAL	30,12,03,017	84,18,82,012	1,87,72,12,471	6,70,39,74,817
ASSETS				
1. Non-current assets				
Property, Plant & Equipment				
Tangible asset	15,62,465	23,18,928	90,22,442	1,74,60,727
Intangible asset	-	-	-	4,89,17,945
Non-current investment	2,40,00,000	2,40,00,000	7,40,00,017	2,40,00,000
Deffered tax assets(net)	-	2,71,569	1,71,53,450	1,88,10,297
Long-term loans & advances	71,12,870	82,50,000	2,41,41,410	1,96,63,170
Other non-current assets	-	-	-	-
2. Current assets				
Inventories	6,17,03,483	33,12,55,653	80,79,21,873	3,32,12,89,553
Trade receivables	16,29,77,182	38,81,47,058	55,27,45,539	77,74,31,891
Cash & Cash equivalents	7,17,441	2,18,488	8,56,55,362	1,48,89,24,601
Short-term loan & advances	4,31,29,576	8,74,20,316	30,47,76,842	98,39,07,943
Other current assets	-	-	17,95,536	35,68,690
TOTAL	30,12,03,017	84,18,82,012	1,87,72,12,471	6,70,39,74,817

Vijaygarh Jyotish Ray College

Ratio Analysis:

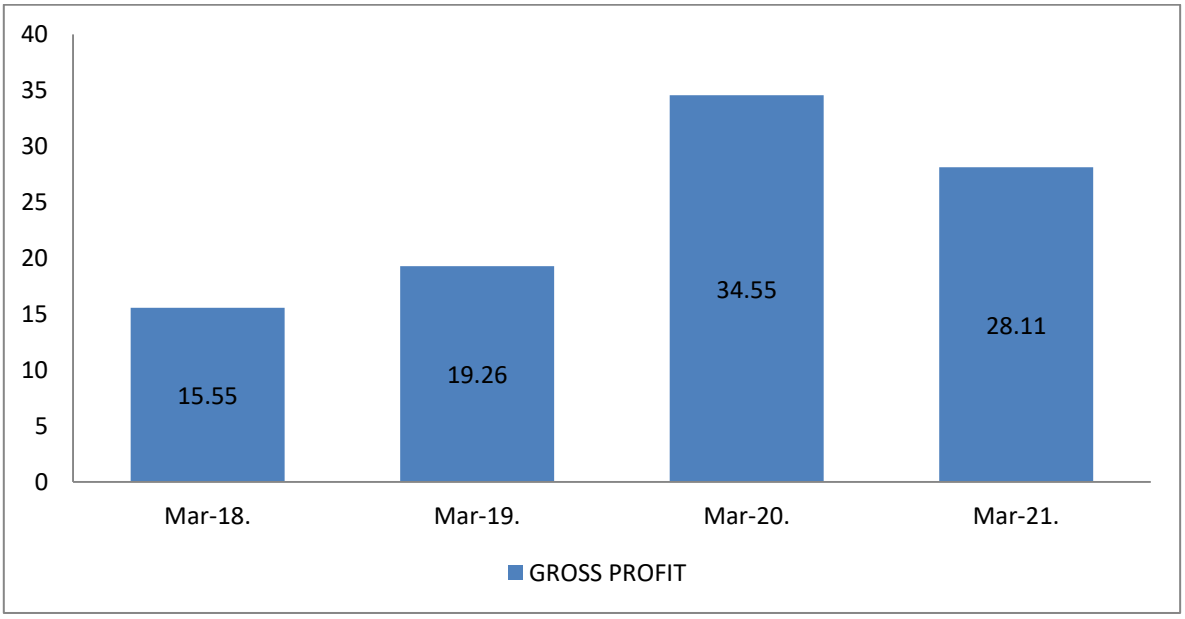
The ratios which determine the financial performance of the company

- **Profitability Ratio:**

  A. Gross Profit Ratio

  G.P ratio= (Gross profit/Sales)*100

Mar-18	Mar-19	Mar-20	Mar-21
15.55	19.26	34.55	28.11



COMMENT: The ratio can be used to test the business condition by comparing it with past year ratios and with the ratio of other companies in the industry. A improvement in gross profit ratio over the past years is the indication of continuous improvement.

B. Operating profit Ratio:

O.P. Ratio= (operating profit/net sales)*100

Mar-18	**Mar-19**	**Mar-20**	**Mar-21**
7.51	5.42	10.19	4.40

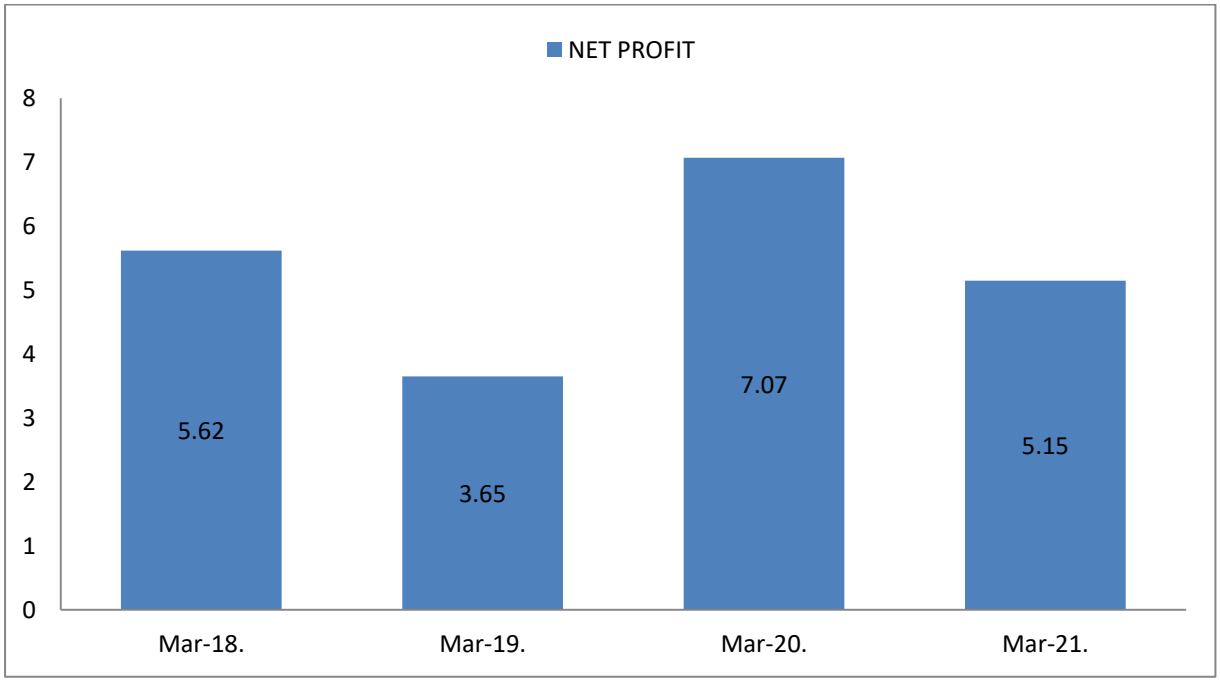
Vijaygarh Jyotish Ray College

COMMENT: The operating profit shows how much profit a company makes after paying the variable costs of production such as wages, raw material etc. a higher operating margin is more favourable compared with a lower ratio because it shows that the company is making enough money from the ongoing operations to pay the expenses.

C. NET PROFIT RATIO:

N.P. Ratio= (net profit/sales)*100

Mar-18	Mar-19	Mar-20	Mar-21
5.62	3.65	7.07	5.15



- **Liquidity/ Solvency Ratio:**

A. Current Ratio

Current Ratio= (Current Asset/Current Liabilities)

Vijaygarh Jyotish Ray College

Mar-18	Mar-19	Mar-20	Mar-21
1.24	1.75	1.76	3.22

COMMENT: here we can see that from the year 2018 to 2021 there is increase in current asset. It is assumed that higher the ratio, higher is the liquidity.

B. Quick Ratio:

Quick Ratio= (current Asset-Inventory)/Current Liability

Mar-18	Mar-19	Mar-20	Mar-21
0.95	1.03	0.95	1.60

COMMENT: A quick ratio that is greater than 1 means that the company has enough quick assets to pay for its current liabilities. But here we can see in the year 2018 and 2020 the company has the quick ratio below 1 but not to far from it.

- **Management Efficiency ratio:**

A. Inventory Turnover Ratio:

Inventory turnover ratio= (Cost of Goods Sold/Average Inventory)

Mar-18	Mar-19	Mar-20	Mar-21
2.68	2.34	4.24	2.05

COMMENT: Inventory turnover ratio measures the velocity of conversion of stock into sales. A higher inventory velocity indicates efficient management of inventory because more frequently the stocks are sold, the lesser amount of money is required to finance the inventors.

Vijaygarh Jyotish Ray College

B. Asset turnover Ratio:

Asset Turnover Ratio= (Net Sales/ Average Total Assets)

Mar-18	Mar-19	Mar-20	Mar-21
10.53	17.10	94.04	87.55

COMMENT: The ratio measures the efficiency of how well a company uses assets to produce sales. A higher ratio is favourable, as it indicates a more efficient us of asset.

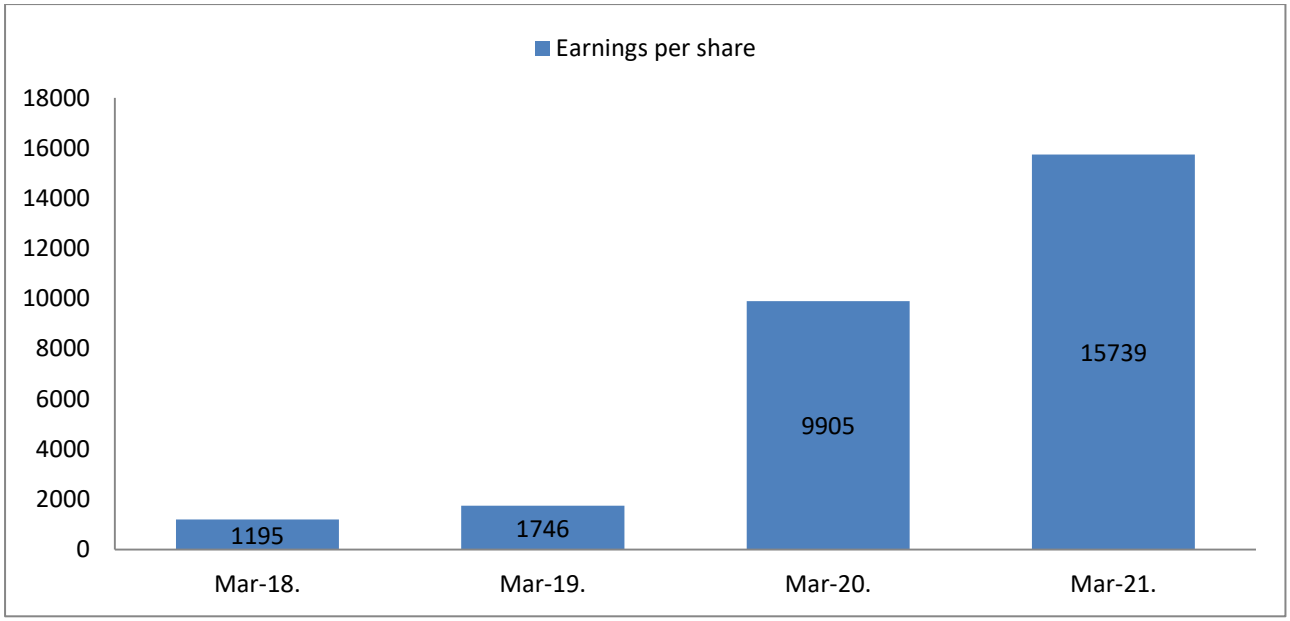
- **Earnings Per Share:**

  Earnings Per Share= (net profit after tax – preference dividend)/number of equity shares.

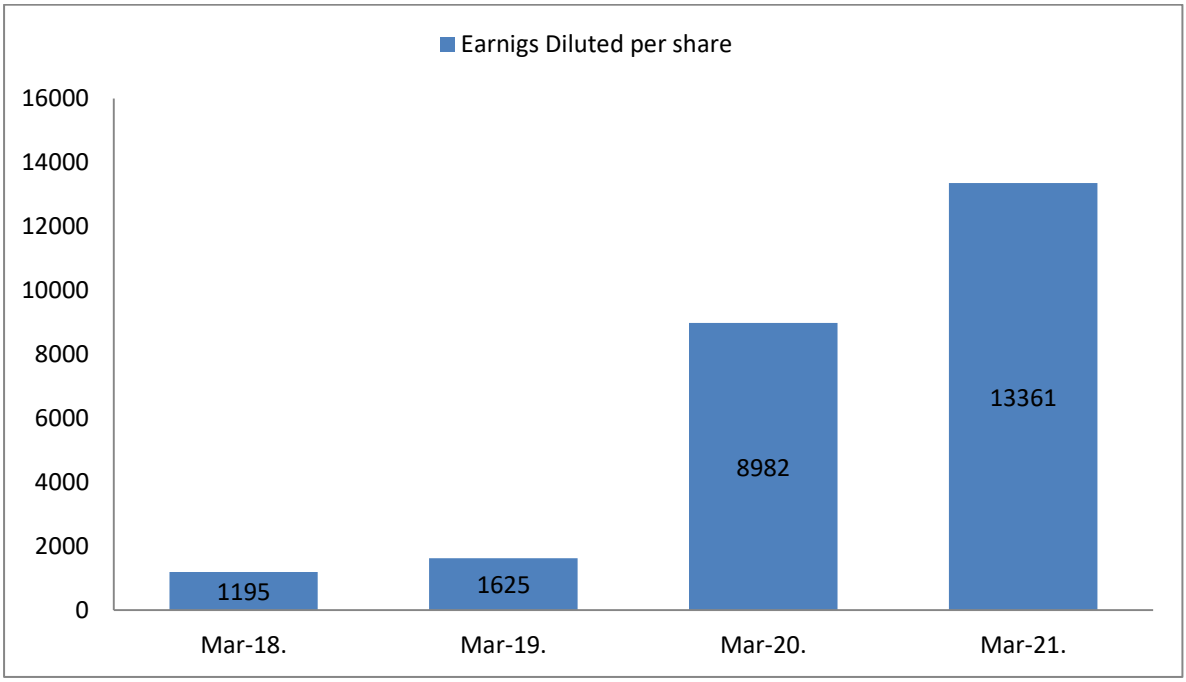
Mar-18	Mar-19	Mar-20	Mar-21
1,195	1,746	9,905	15,739

COMMENT: Earnings per share most frequently present in financial statements and it is a very reliable figure for investors. It is useful for existing and new equity shareholders for forecasting the value of the shares in the future. A high EPS is a sign of better earnings. Strong financial position and therefore a reliable company to invest in.

Vijaygarh Jyotish Ray College



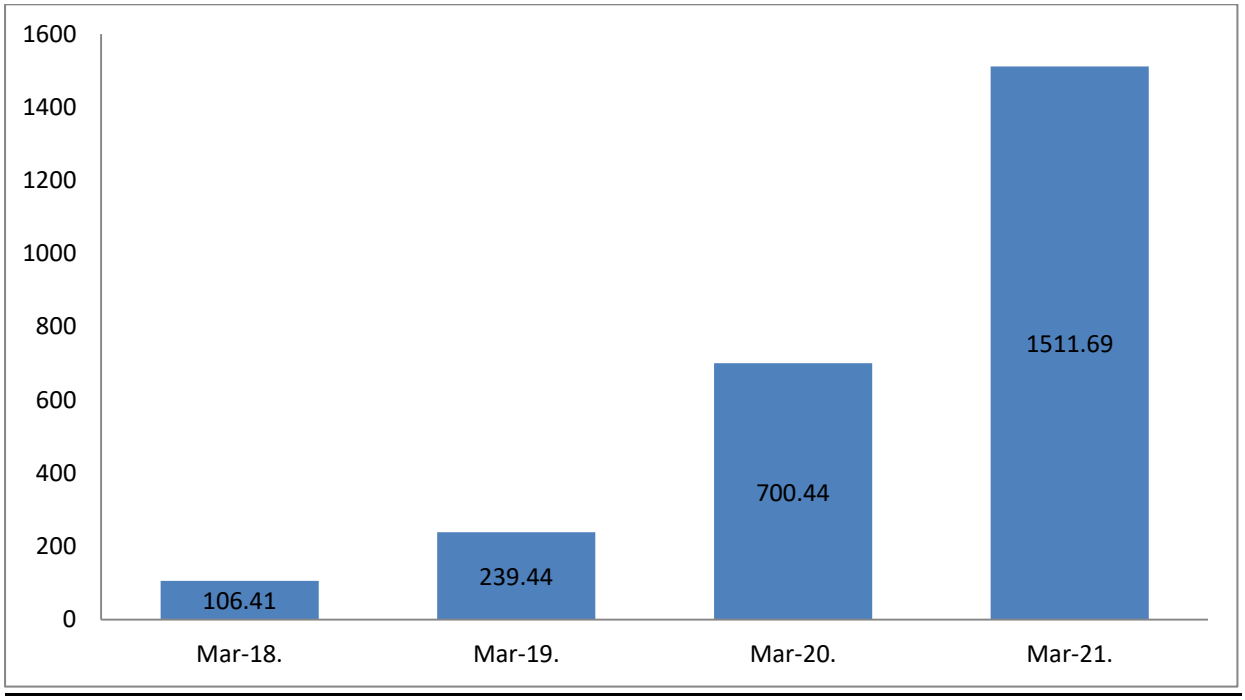
- **Earnings Diluted per share:**



This chart shows how much dividend was paid during the years.

Vijaygarh Jyotish Ray College

- **Net sales growth of the company:**



(All values in cr.)

Comparison among the other companies in this similar field:

- **Earnings per share:**

Name of the Company	2018	2019	2020	2021
JBL	5,765	5,564	3,510	2,761
BoAt	1,195	1,746	9,905	15,739
MIVI	55	62.	75	69
UBON	96	94	117	88

- **Net Sales:**

Name of the Company	2018	2019	2020	2021
JBL	248.30	243.32	177.58	123.00
BoAt	106.41	239.44	700.44	1,511.69
MIVI	38.58	35.04	58.66	53.47
UBON	111.70	111.53	136.17	76.93

(All values in cr.)

Vijaygarh Jyotish Ray College

3.4 ANALYSIS:

It is seen that BoAt Ltd. is performing well or rather better than some of the existing companies. This company managed to increase their sales from the last 4 years and the EPS is continuously rising. Higher EPS is always good as compared to lower ones. Higher EPS means the company is continuously making profit.

Vijaygarh Jyotish Ray College

CHAPTER-4

CONCLUSION & RECOMMENDATION

Vijaygarh Jyotish Ray College

4.1 Conclusion:

Financial statement analysis determines a company's health and stability, providing an understanding of how the company conducts its business. But it is important to know the financial statement analysis has its limitations as well. Different accounting methods adopted by different firm changes the visible health and profit levels for either better or worse. Different analysts may get different results from the same information. Hence, we must conclude that financial statement analysis is only one of the tools while taking an investment decision.

Ratio analysis in view of its several limitations should be considered only as tool for analysis rather than as an end itself. The reliability and significance attached to ratios will largely hinge upon the quality of data on which they are based. They are as good or as bad as the data itself.

4.2 Recommendation:

I. Organization can conduct some of the motivational programs like conducting some competitions among the employees which will motivate them to take part actively and help them to reduce their success.

II. A majority of the customers give opinions that they are satisfied is the factor, service and design of the product of the company should take not only maintain the existing standard but also enhance them.

III. The company can undertake research and development to improve their product to increase the customer satisfaction.

Vijaygarh Jyotish Ray College

5. Bibliography/Reference:

www.BoAt-liferstyle.com

www.wikipedia.org

www.moneycontrol.com

www.Byjus.com

www.capitalmarket.com

Principal
Vijaygarh Jyotish Ray College
Kolkata-700 032