KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF EDUCATION

(PROJECT WORK 2022-23)

Course Title: Project Work

PAPERCODE: AP/EDN/404/SEC-2

UNDER THE GUIDANCE OF

- SHRI AKINCHAN PAL (FACULTY & HOD)
- SHRI SUKANTA MAHATA
- SHRI RABIN BANERJEE

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct **"Project Work" Under Education Course (Field Trip), Paper code: AP/EDN/404/SEC-2**

Respected Sir/Madam,

I am writing to seek your kind support to conduct a field trip as an outcome of a semester-long Project-Work titled: **"PROJECT WORK"** as part of **Education Course, Paper code: AP/EDN/404/SEC-2,** associated with project/field study for 4th semester students. The course outcome as mentioned in the curriculum: "**Visit to a place of educational importance and writing report**" and has been settled from departmental meeting and will be better to be scheduled 05.03.2023. The department has selected **Bishnupur** on the basis of educational significance of this heritage place; reflecting a significant part of **Indian Knowledge System**. This activity is crucial for the practical understanding and application of the theoretical knowledge gained during their studies.

I assure you that I will adhere to all the guidelines and regulations of the college during this project/field work. I will also ensure that this work will not disrupt other regular activities of the college or the place involved.

I kindly request you to grant me the necessary permission to undertake this field work. I am confident that this experience will significantly contribute to the academic and professional growth of the students.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

[Shri. Akinchan Pal]
Senior Faculty & Head,
Department of Education,
Khatra Adibasi Mahavidyalaya

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Bankura

Akinchan Pal.

Head
Department of Education
Khatra Adibasi Mahavidyalaya

Departmental seal

INTRODUCTION:

On 5th March 2023, the Department of Education at Khatra Adibasi Mahavidyalaya organized an educational tour to Bishnupur. The primary objective of this tour was to engage students in a project work initiative that focused on the educational significance of the region.

Target group: - 4th Semester Programme students.

Number of Students participated- 12.

OBJECTIVE OF THE TOUR:

- To visit the historical place at Bishnupur,
- To enhance the classroom learning.
- To study the scientific principles behind the Bishnupur's Architecture.

CULTURAL AND HISTORICAL EXPLORATION:

The educational tour aimed at providing students with an opportunity to explore the rich cultural and historical heritage of Bishnupur. The town is renowned for its terracotta temples and traditional handicrafts. Students were encouraged to understand and appreciate the cultural diversity of the region.

PROJECT WORK ON EDUCATIONAL IMPORTANCE:

The central goal of the tour was to engage students in a hands-on project that would enhance their understanding of the educational landscape in Bishnupur. This involved researching and documenting the historical evolution of education in the region, the challenges faced by the local educational institutions, and the efforts taken by the Department of Education to address these challenges.

VISIT TO TERRACOTTA TEMPLES:

The day commenced with a visit to the famous terracotta temples of Bishnupur. Students were encouraged to analyze the artistic and architectural aspects of these temples, understanding their historical and cultural significance.

INTERACTION WITH LOCAL EDUCATIONAL AUTHORITIES:

Students had the opportunity to interact with representatives from local academic authorities like Museum. This provided valuable insights into the challenges faced by Academic institutions in the region and the initiatives taken to improve the quality of education.

DOCUMENTATION AND RESEARCH:

In the afternoon, students were divided into groups for their project work. Each group focused on different aspects such as

the history of education, current educational infrastructure, and initiatives to promote education in Bishnupur.

VISIT TO BISHNUPUR MUSEUM:
The educational tour included a visit to the Bishnupur Museum, Jadubhatta Mancha where students had the chance to explore artifacts and exhibits related to the history of education specially Music, Art and Archaeology in the region.

PROJECT OUTCOMES:

COMPREHENSIVE UNDERSTANDING:
Students gained a comprehensive understanding of the cultural, historical, and educational aspects of Bishnupur, contributing to their overall academic knowledge.

RESEARCH AND DOCUMENTATION SKILLS:
The project work enhanced students' research and documentation skills as they compiled information on the educational landscape of Bishnupur.

CULTURAL SENSITIVITY:
Exposure to the cultural diversity of Bishnupur fostered cultural sensitivity among students, encouraging them to appreciate and respect different cultural contexts.

CONCLUSION:

The educational tour of the Department of Education at Khatra Adibasi Mahavidyalaya to Bishnupur on 5th March 2023 was a resounding success. It not only provided students with a valuable learning experience but also allowed them to contribute meaningfully through their project work on the educational importance of the region. This initiative aligns with the department's commitment to holistic education and community engagement.

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Ba

KHATRA ADIBASI MAHAVIDYALAYA

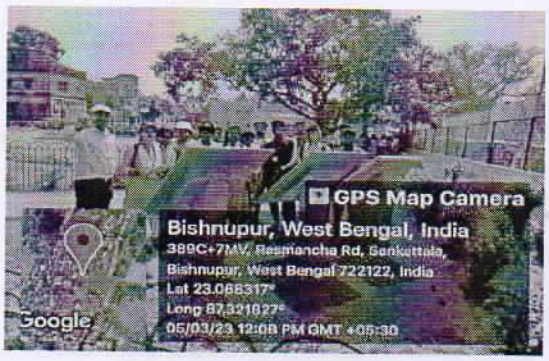
SEMESTER – III / IV. PAPER- SEC- 2

PROJECT WORK : EDUCATIONAL TOUR:BISHNUPUR (DATE: 05-03-2023)

SL NO	NAME	UID NO	PHONE NO	SIGNATURE	REMARKS
01	SANGHAMITRA KARMAKAR	21111202013	7384983550	Sanghamitra Karmakar	
02	HIKIM BESRA	21111202011	8509021846	HIKIM BESRA	
03	JEET MANDAL	21111202006	7797192806	Jeet . Mondal	
04	MALLIKA MANDAL	21111202004	9679921917	Mallika mandal	
05	NILA BAURI	21111202007	7477388081	Nila Bauri	
05	PAYEL MANDAL	21111202003	9933407904	Payel Mandal	
07	RIMPA DANGAR	21111202008	7318839891	Rimpa Dangar	
08	SUJATA MURMU	21111202010	8509556758	Sujata Murmu	
09	SUSMITA DAS	21111202015	7478050058	Susmita Das	
10	TAPABRATA PAL	21111202009	9883239892	Tapabrata Pal	
11	UMUL MANDI	21111202016	9339516932	UMUL MANDI	
12	PRASANTA SAREN	21111202005	7363944268	Prasanta Saren	
13					
14					

Head
Department of Education
Khatra Adibasi Mahavidyalaya

PHOTO GALLERY



Shri Akinchan Pal
Head, Department of Education

Head
Department of Education
Khatra Adibasi Mahavidyalaya

Khatra Adibasi Mahavidyalaya

P.O.: Khatra, Dist. Bankura, West Bengal, Pin: 722140
Phone: 8900057220 E-mail: *khatraacollege@gmail.com/ kacollege@rediffmail.com*
Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Date..05/03/2023

Certificate of Project Completion

This is to certify that the following students of **4th semester**, has successfully completed the project titled **"Project Work" [Course Code: AP/EDN/404/SEC-2]** under the guidance of **Shri Akinchan Pal, Faculty & HoD, Department of Education, Khatra Adibasi Mahavidyalaya** throughout the 4th semester in the academic year 2022-23.

This project work/field work has been evaluated and found to meet the requirements and standards set by the Department of Education.

We commend the following students for their hard work, dedication, and commitment to excellence.

Sl No.	Name	UID	Phone
1	Sanghamitra Karmakar	21111202013	7384983550
2	Hikim Besra	21111202011	8509021846
3	Jeet Mandal	21111202006	7797192806
4	Mallika Mandal	21111202004	9679921917
5	Nila Bauri	21111202007	7477388081
6	Payel Mandal	21111202003	9933407904
7	Rimpa Dangar	21111202008	7318839891
8	Sujata Murmu	21111202010	8509556758
9	Susmita Das	21111202015	7478050058
10	Tapabrata Pal	21111202009	9883239892
11	Umul Mandi	21111202016	9339516932
12	Prasanta Saren	21111202005	7363944268

Akinchan Pal.

Head
Department of Education
Khatra Adibasi Mahavidyalaya

Supervisor's Signature:

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Bankura

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

Principal's Signature:


GPS Map Camera
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Long 87.33034°
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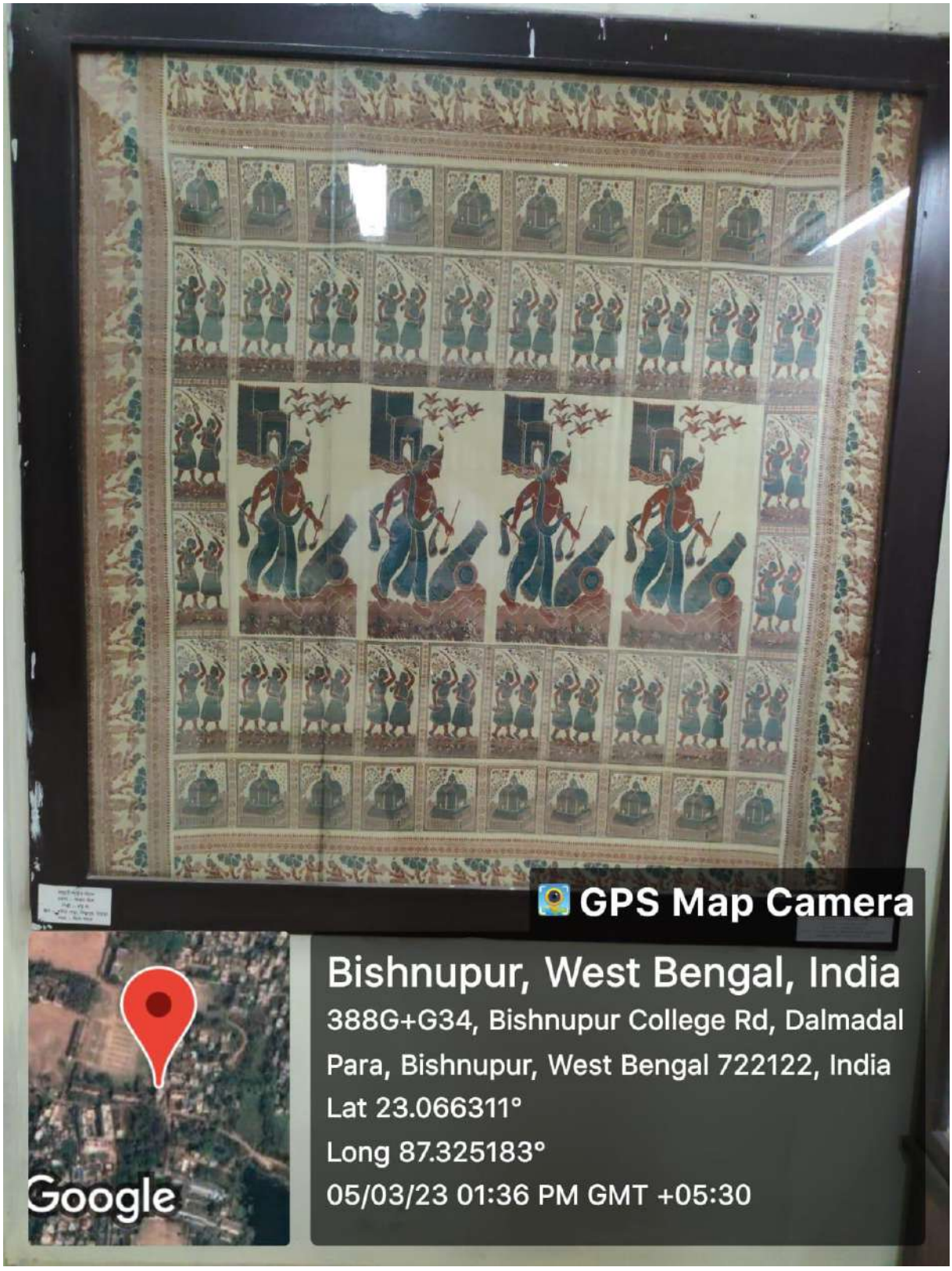
Google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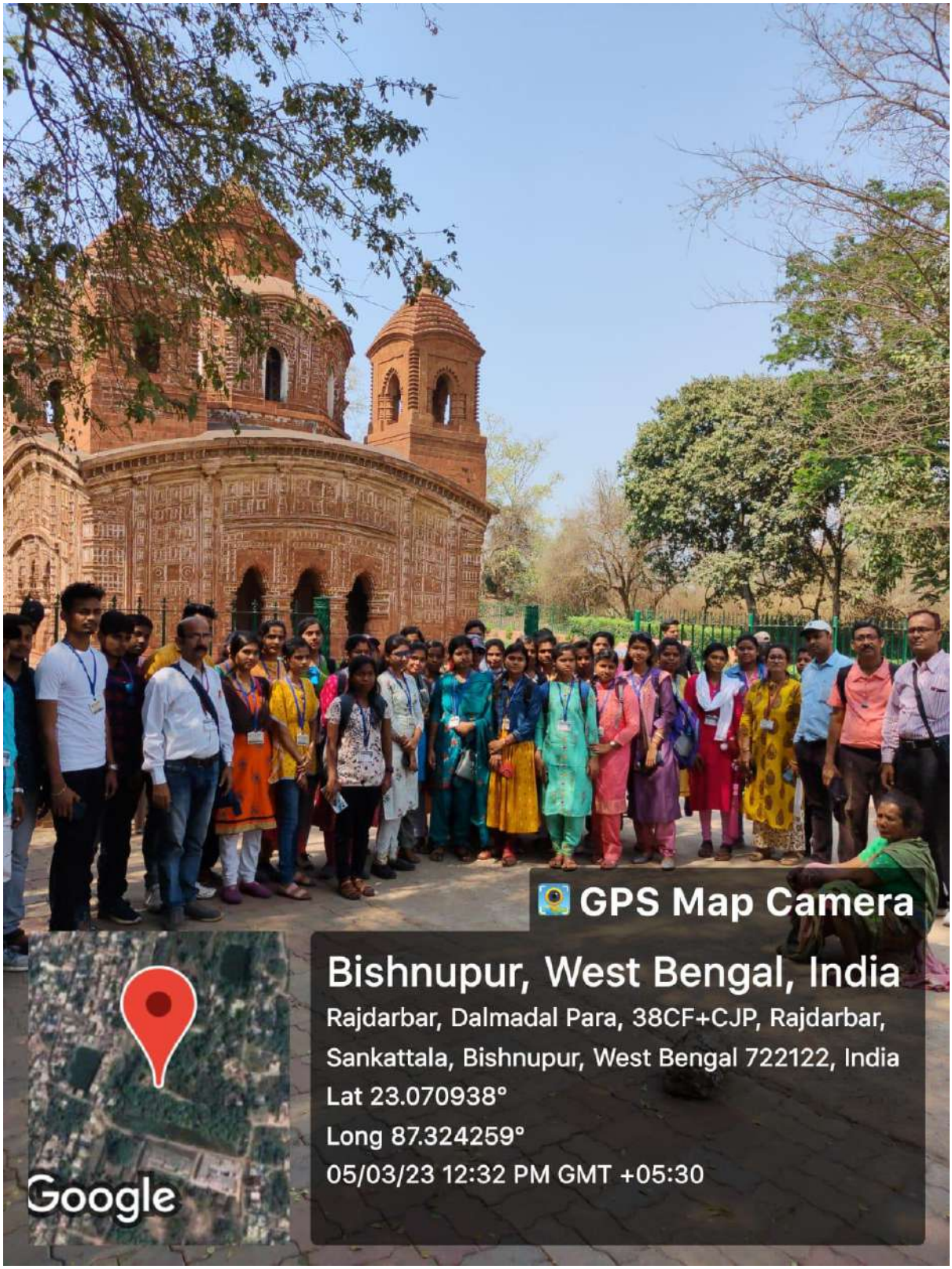
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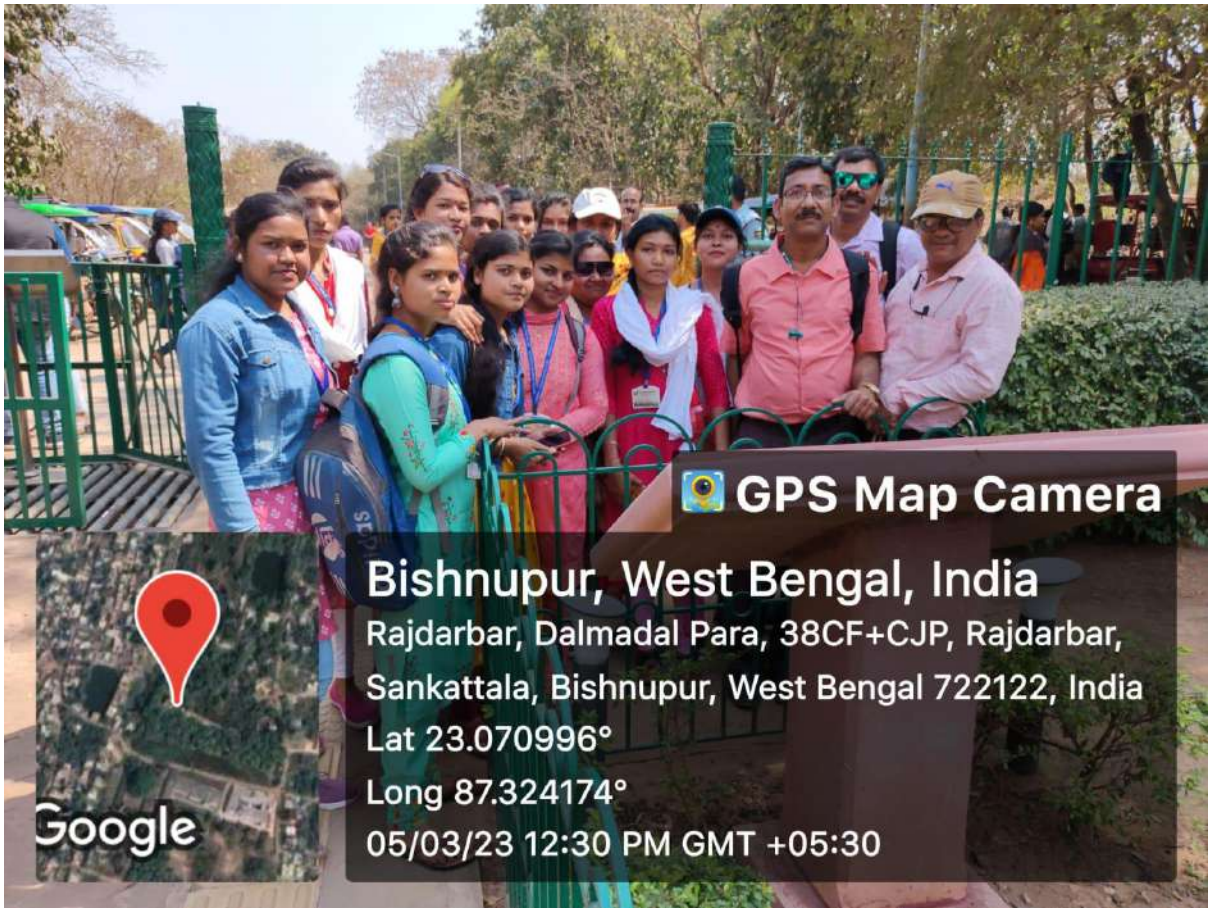
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Long 87.324174°
05/03/23 12:30 PM GMT +05:30
Google


GPS Map Camera
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388G+G34, Bishnupur College Rd, Dalmadal Para, Bishnupur, West Bengal 722122, India
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7:50P.M. বাগীবাঁধ TO কোলকাতা 9:20P.M.
KHATRA ADIBASI MAHAVIDYALAYA
DEPARTMENT OF EDUCATION
EDUCATIONAL TOUR
PLACE- BISHNUPUR, BANKURA
DATE- 5TH MARCH 2023
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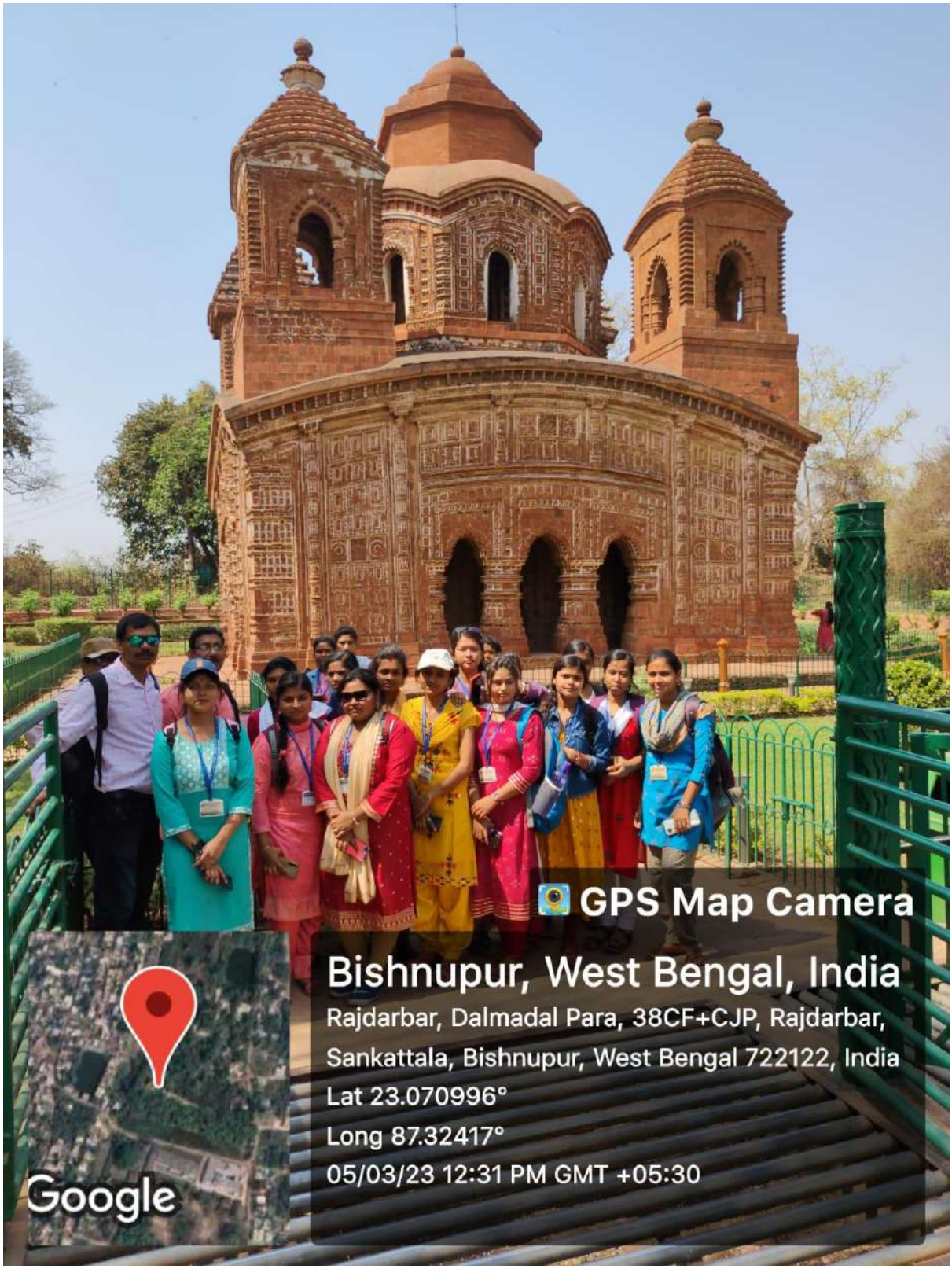
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Rajdarbar, Dalmadal Para, 38CF+CJP, Rajdarbar, Sankattala, Bishnupur, West Bengal 722122, India
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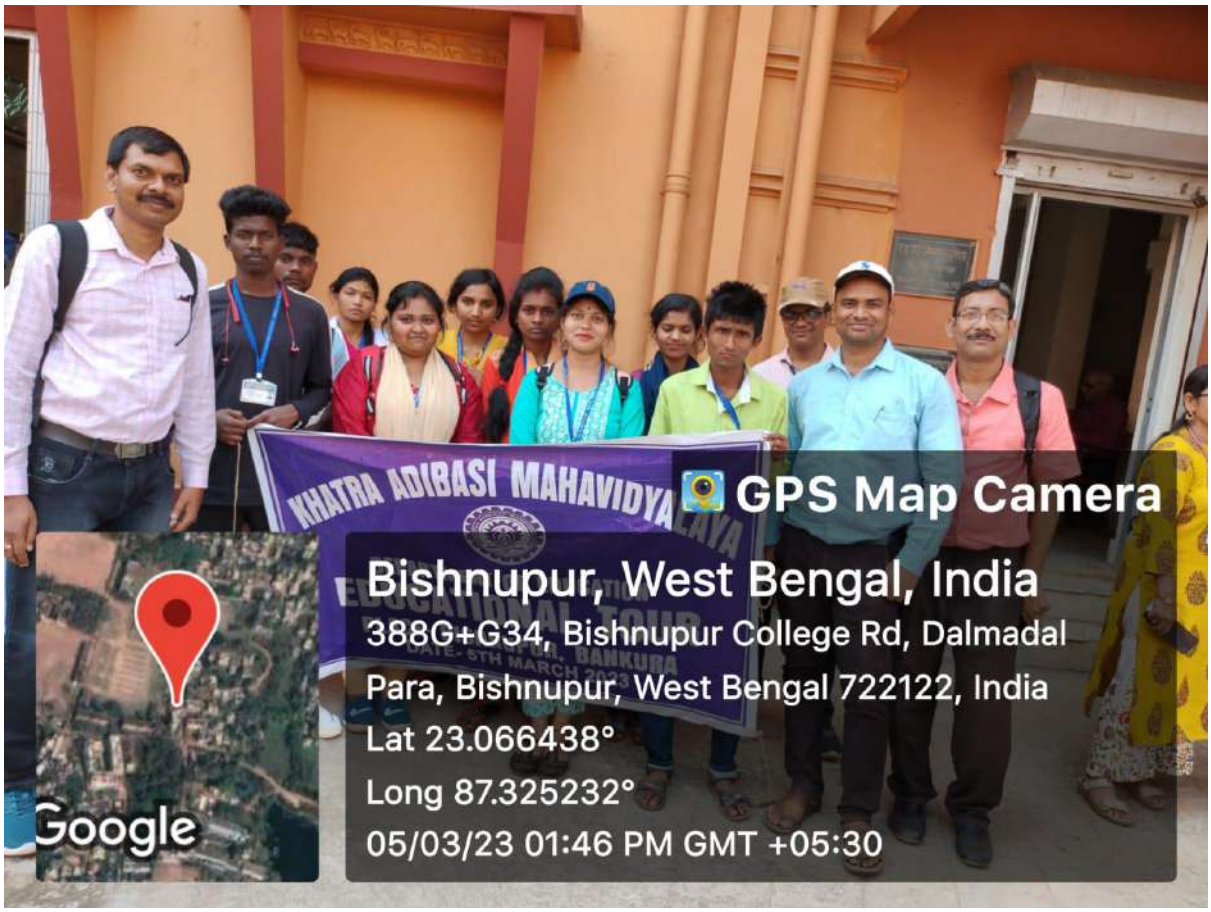
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Long 87.325232°
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KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF EDUCATION

(FIELD WORK 2022-23)

Course Title: School Activity Survey

COURSE CODE: AP/EDN/504/SEC-3

UNDER THE GUIDANCE OF

- SHRI AKINCHAN PAL (FACULTY & HOD)
- SHRI SUKANTA MAHATA
- SHRI RABIN BANERJEE

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct **"Field Work" Under Education Course (School Activity Survey), Course code: AP/EDN/504/SEC-3**

Respected Sir/Madam,

I am writing to seek your kind support to conduct **School Activity Survey** as an outcome of a semester-long Field-Work titled: **"SCHOOL ACTIVITY SURVEY"** as part of **Education Course, Course code: AP/EDN/504/SEC-3,** associated with field study for **5th semester students**. The course outcome as mentioned in the curriculum & has been settled to visit their own schools. According to departmental meeting the field work will be throughout the odd semester for the academic session 2022-23. This activity is crucial for the practical understanding and application of the theoretical knowledge gained during their field studies.

I assure you that I will adhere to all the guidelines and regulations of the college during this project/field work. I will also ensure that this work will not disrupt other regular activities of the college or the place involved.

I kindly request you to grant me the necessary permission to undertake this field work. I am confident that this experience will significantly contribute to the academic and professional growth of the students.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Khatra Adibasi Mahavidyalaya
Estd-1979
Khatra, Bankura

[Shri. Akinchan Pal]
Senior Faculty & Head,
Department of Education,
Khatra Adibasi Mahavidyalaya

Akinchan Pal.
Head
Department of Education
Khatra Adibasi Mahavidyalaya

Departmental seal

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct **"Field Work" Under Education Course (School Activity Survey), Course code: AP/EDN/504/SEC-3**

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Yours sincerely,

[Shri. Akinchan Pal]
Senior Faculty & Head,
Department of Education,
Khatra Adibasi Mahavidyalaya

Head
Department of Education
Khatra Adibasi Mahavidyalaya

Departmental seal

General Report on School Activity Survey

Course Code: AP/EDN/504/SEC-3

5th Semester, Department of Education

Khatra Adibasi Mahavidyalaya

Aims

The primary aim of this school activity survey is to conduct a comprehensive evaluation of various schools to understand their functioning, infrastructure, academic and extracurricular achievements, administrative policies, and overall environment. The detailed aims of this survey include:

1. **Comprehensive School Assessment**
   - To provide an in-depth assessment of the schools by collecting detailed data on multiple facets such as infrastructure, teaching quality, and student performance. This assessment aims to give a holistic view of the schools' operational effectiveness.
2. **Identification of Best Practices**
   - To identify successful practices and programs implemented by schools that contribute to their effective functioning. By documenting these practices, the survey aims to provide a reference for other schools to adopt and improve their own operations.
3. **Highlighting Areas for Improvement**
   - To pinpoint specific areas where schools are lacking and need improvement. This includes infrastructure deficits, inadequacies in teaching methods, and gaps in student services. Identifying these areas aims to help schools focus their improvement efforts more effectively.
4. **Promoting Inclusive Education**
   - To evaluate how well schools accommodate the needs of all students, including those with physical challenges. This aims to ensure that all students have equal access to education and facilities, promoting an inclusive environment.
5. **Facilitating Data-Driven Decisions**
   - To provide comprehensive data and insights that school administrators and policymakers can use to make informed decisions regarding school improvement initiatives. This data-driven approach aims to enhance the overall quality of education provided.

Objectives

To achieve these aims, the following specific objectives have been outlined for the school activity survey:

1. **Basic Information of the Schools**
    - **Objective:** To gather and document essential details such as the name, location, establishment year, and type (government/private) of each school surveyed.
    - **Details:** This includes understanding the historical background of the schools, their geographical setting, and their organizational structure. This basic information serves as a foundation for further detailed analysis.
2. **Achievements**
    - **Objective:** To compile a record of academic and extracurricular achievements of the schools, highlighting notable accomplishments.
    - **Details:** This involves collecting data on students' academic performance, such as average exam scores, percentage of students passing, and notable achievements in exams. Additionally, the survey will document achievements in extracurricular activities, including sports, arts, and community engagement programs.
3. **Student Information**
    - **Objective:** To collect comprehensive data on student demographics, including the total number of students and grade-wise distribution.
    - **Details:** This includes understanding the student population size, age range, and distribution across different grades. This demographic information is crucial for analyzing various aspects of school functioning, such as teacher-student ratios and resource allocation.
4. **Teacher Information**
    - **Objective:** To gather information on the number of teachers, their qualifications, and years of experience.
    - **Details:** This involves collecting data on the academic qualifications of teachers, their professional development, and their years of teaching experience. Understanding teacher demographics helps in evaluating the quality of education provided and identifying areas for professional development.
5. **Teacher-Student Ratios**
    - **Objective:** To calculate and analyze the overall and grade-wise teacher-student ratios in the schools.
    - **Details:** This involves determining the number of students per teacher in each grade and overall. Teacher-student ratios are a critical indicator of the quality of education, as lower ratios often correlate with more personalized attention and better learning outcomes.
6. **Male-Female Student Ratios**
    - **Objective:** To determine the gender distribution among students and analyze it across different grades.
    - **Details:** This includes calculating the proportion of male and female students in each grade and overall. Understanding gender distribution is essential for ensuring gender equality and addressing any disparities in access to education.
7. **Curriculums**

- **Objective:** To review the subjects and special programs offered by the schools, including any vocational or advanced placement courses.
- **Details:** This involves documenting the core curriculum, elective subjects, and any special programs such as vocational training or advanced placement courses. Reviewing the curriculum helps in assessing its comprehensiveness and relevance to students' needs.

8. **Administration**
   - **Objective:** To examine the administrative structure and policies of the schools, focusing on leadership, discipline, attendance, and assessment.
   - **Details:** This includes understanding the roles and responsibilities of school leaders, administrative staff, and the policies they implement. Effective administration is crucial for maintaining discipline, ensuring regular attendance, and conducting fair assessments.
9. **Teacher-Student Relationships**
   - **Objective:** To assess the quality of interactions and relationships between teachers and students, including mentorship and feedback mechanisms.
   - **Details:** This involves evaluating how teachers engage with students, the availability of mentorship programs, and the mechanisms in place for providing feedback. Strong teacher-student relationships contribute to a positive learning environment and better educational outcomes.
10. **Common Rooms**
    - **Objective:** To evaluate the availability and quality of common rooms, including the facilities provided for students' recreational activities.
    - **Details:** This includes assessing the size, location, and facilities of common rooms, such as seating arrangements, recreational resources, and their usage by students. Common rooms play a significant role in promoting social interaction and relaxation among students.
11. **Lunch Areas and Menu Charts**
    - **Objective:** To inspect the lunch areas for hygiene, cleanliness, and facilities such as seating capacity and meal services.
    - **Details:** This involves evaluating the location, cleanliness, and facilities of lunch areas, as well as reviewing the menu charts to ensure that nutritious meals are provided. Proper lunch areas contribute to the overall well-being and health of students.
12. **Infrastructures**
    - **Objective:** To assess the overall infrastructure of the schools, including classroom facilities, laboratories, and library resources.
    - **Details:** This includes evaluating the condition, size, and equipment of classrooms, the availability and quality of laboratories (science, computer, etc.), and the resources and facilities of the school library. Good infrastructure is essential for providing a conducive learning environment.
13. **Toilets**
    - **Objective:** To examine the number, distribution, and maintenance of toilet facilities, ensuring they are clean and accessible.
    - **Details:** This involves assessing the availability and cleanliness of toilets, their distribution across the school, and whether they meet hygiene standards. Adequate toilet facilities are crucial for maintaining the health and comfort of students and staff.
14. **Ramps for Physically Challenged Students**

- **Objective:** To verify the availability and accessibility of ramps and other facilities for physically challenged students.
- **Details:** This includes checking the presence of ramps, their accessibility, and additional support mechanisms for physically challenged students. Ensuring accessibility is vital for promoting inclusive education.

15. **Number of Classrooms**
    - **Objective:** To count and evaluate the condition and maintenance of classrooms in each school.
    - **Details:** This involves documenting the total number of classrooms, their size, condition, and maintenance status. The number and quality of classrooms directly impact the learning experience of students.
16. **Library Facilities**
    - **Objective:** To review the resources available in school libraries, including the number of books, digital resources, and study areas.
    - **Details:** This includes assessing the quantity and quality of books, availability of digital resources, and the provision of study areas in school libraries. A well-equipped library is a crucial resource for enhancing students' learning and research skills.
17. **SWOT Analysis**
    - **Objective:** To conduct a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis for each school, providing a strategic overview of their current status and potential areas for development.
    - **Details:** This involves identifying the strengths and weaknesses of each school, as well as the opportunities and threats they face. Conducting a SWOT analysis helps in strategic planning and prioritizing areas for improvement.

Detailed Objectives

Basic Information of the Schools

Objective: To gather and document essential details such as the name, location, establishment year, and type of each school surveyed.

Details:

- **Name and Location:** Documenting the official name and geographical location of the school helps in identifying the context and setting in which the school operates.
- **Establishment Year:** Understanding the history and longevity of the school provides insights into its evolution and experience in the education sector.
- **Type (Government/Private):** Identifying whether the school is government-run or privately managed helps in understanding the regulatory framework and funding mechanisms.

Achievements

Objective: To compile a record of academic and extracurricular achievements of the schools, highlighting notable accomplishments.

Details:

- **Academic Performance:** Collecting data on students' performance in standardized tests, internal exams, and board exams. This includes average scores, pass percentages, and distinctions achieved.
- **Extracurricular Activities:** Documenting achievements in sports, arts, cultural activities, and other extracurricular domains. This includes participation in inter-school competitions, awards won, and notable performances.
- **Community Engagement:** Highlighting programs that involve the local community, such as social service projects, parent-teacher associations, and community events organized by the school.

Student Information

Objective: To collect comprehensive data on student demographics, including the total number of students and grade-wise distribution.

Details:

- **Total Number of Students:** Documenting the overall student population helps in understanding the scale of the school's operations.
- **Grade-wise Distribution:** Analyzing the number of students in each grade provides insights into enrollment patterns, class sizes, and the distribution of educational resources.

Teacher Information

Objective: To gather comprehensive information on the number of teachers, their qualifications, and years of experience to evaluate the quality of education provided and identify areas for professional development.

Details:

1. **Number of Teachers:**
   - **Objective:** To document the total number of teaching staff in the school.
   - **Details:** This includes full-time, part-time, and visiting faculty. Understanding the staffing levels helps in assessing the teacher-student ratios and the adequacy of teaching resources.
2. **Qualifications:**
   - **Objective:** To collect data on the academic and professional qualifications of teachers.
   - **Details:** This involves documenting the highest degree obtained by each teacher, such as Bachelor's, Master's, or Doctorate, as well as any additional certifications or specialized training they may have received. Highly qualified teachers are often better equipped to provide high-quality education.
3. **Years of Experience:**
   - **Objective:** To analyze the teaching experience of the faculty.
   - **Details:** This includes recording the number of years each teacher has been in the profession and their tenure at the current school. Experienced teachers can bring valuable insights and effective teaching strategies to the classroom.

4. **Professional Development:**
    - **Objective:** To evaluate the ongoing professional development and training programs available to teachers.
    - **Details:** This involves documenting participation in workshops, seminars, and other professional development activities. Continuous professional development is crucial for teachers to stay updated with the latest educational practices and methodologies.

5. **Teacher Demographics:**
    - **Objective:** To collect demographic information of teachers, including age, gender, and ethnic background.
    - **Details:** This helps in understanding the diversity of the teaching staff and identifying any potential areas for promoting inclusivity and diversity within the faculty.

6. **Teacher Roles and Responsibilities:**
    - **Objective:** To detail the specific roles and responsibilities assigned to teachers.
    - **Details:** This includes their subject specializations, extracurricular responsibilities, administrative duties, and involvement in school committees. Understanding these roles helps in assessing the workload and distribution of responsibilities among teachers.

7. **Teacher-Student Interaction:**
    - **Objective:** To assess the nature and quality of interactions between teachers and students.
    - **Details:** This includes evaluating the mentorship programs, availability of teachers for extra help, and the feedback mechanisms in place. Positive teacher-student interactions are essential for creating a supportive and effective learning environment.

8. **Teacher Satisfaction and Retention:**
    - **Objective:** To measure teacher satisfaction and retention rates.
    - **Details:** This involves collecting data on job satisfaction, reasons for turnover, and strategies employed by the school to retain quality teachers. High teacher satisfaction and retention rates often correlate with a stable and positive school environment.

9. **Impact on Student Performance:**
    - **Objective:** To correlate teacher information with student academic performance and overall development.
    - **Details:** This includes analyzing how teacher qualifications, experience, and professional development impact student outcomes. Effective teachers significantly contribute to students' academic success and personal growth.

10. **Feedback and Evaluation:**
    - **Objective:** To review the feedback and evaluation mechanisms for teachers.
    - **Details:** This includes the process of teacher evaluations, feedback from students and parents, and the use of these evaluations in professional development and performance improvement. Constructive feedback is essential for teachers' continuous improvement and effectiveness.

By gathering detailed information on teachers, this objective aims to provide a comprehensive understanding of the teaching quality in schools, highlight areas for improvement, and promote strategies for professional development and teacher retention.

The descriptive reports on **School Activity Survey prepared by the students** have been attached in vernacular language (Bengali) form.

P.T.O

BANKURA UNIVERSITY

KHATRA ADIBASI MAHAVIDYALAYA

5th SEM EXTERNAL PRACTICAL EXAMINATION

NAME OF STUDENT :– SOUMEN DAN

COURSE TITLE :- SCHOOL ACTIVITY SURVEY

COURSE ID:- 50210

COLLEGE ROLL :- 1035

UID NO. :- 20111202001

REG NO. :- BKU/ 11096 0f 2020-21

MOBILE NO. :- 8001880413

19/01/2023

BANKURA UNIVERSITY

Khatra Adibasi Mahavidyalaya ✪ Khatra, Bankura ✪ Estd - 1979

ADMIT CARD

Undergraduate Semester V Examination 2022-2023

UID No : **20111202001**
Registration No : **11096 of 2020-21**
Name : **SOUMEN DAN**
College/University Name : **KHATRA ADIBASI MAHAVIDYALAYA (111)**
Examination Center : **P. R. MURMU SMRITI MAHAVIDYALAYA (114)**
Subject Name : **EDUCATION (PROGRAMME)**

Soumen Dan

Course Code	Course Title with Course ID	Exam Schedule
AP/EDN/501/DSE-1A	INTRODUCTION TO EDUCATIONAL TECHNOLOGY (50218)	Follow University website's U.G. Examination Section under Notification
AP/PLS/501/DSE-1A	ADMINISTRATION & PUBLIC POLICY: CONCEPTS & THEORIES (50818)	
APPHE/503/GE-1	FIRST AID & PERSONAL HYGIENE (50714)	
AP/EDN/504/SEC-3	SCHOOL ACTIVITY SURVEY (50210)	

Instructions :

* Please follow your College/University Notice Board/Bankura University website for latest Notifications / information.
* Practical Examination(s), if applicable, will be conducted at student's own Department of the University / College.

Sd/-
Controller of Examinations

Important instructions to Students / Examinees appearing for Examinations:

1. Please check the e-Admit Card generated carefully and bring discrepancies, if any, to the notice of your College/University immediately.
2. All Examinees appearing for the Odd Semester Examinations 2022-2023 are requested to follow the Bankura University website for all types of guidelines regarding different matters related to the examination process, as Notified by the Controller of Examinations, from time to time.
3. Examinees should understand that any type of violation of any Bankura University Notification issued in relation to the Odd Semester Examinations 2022-2023 would immediately invite action as per Bankura University Examination Regulations.

Sd/-
Controller of Examinations
Bankura University

Project Work

School Activity Survey

কৃতজ্ঞতা স্বীকার (Acknowledgement)

বাঁকুড়া বিশ্ববিদ্যালয়ের অন্তর্গত শিক্ষাবিজ্ঞানের ষষ্ঠ সেমিস্টারের SEC পাঠক্রম হিসাবে School Activity Survey নামক কার্যক্রমটি নির্বাচন করা হয়েছে। বর্তমান কার্যক্রম এর সর্বে যে সমস্ত ব্যক্তিগন আমাকে সাহায্য করেছেন তাদের সহায়তাদানকে কৃতজ্ঞচিত্তে স্মরন করি।

এই কার্যক্রমে যারা প্রথম থেকে শেষ সময়ন্তরে মূল্যায়ন সময় ব্যয় করে প্রত্যক্ষভাবে নির্দেশদান ও অনুপ্রেরনা দিয়ে আমাকে সমৃদ্ধ করেছেন এবং কার্যক্রম প্রতিবেদনটি রচনাসনে সাহায্য করেছেন তারা হলেন বিষয় শিক্ষক মাননীয় অরিন্দম পাল মহাশয় ও সুকান্ত সাহাত মহাশয়। আমি কৃতজ্ঞতা স্বীকার করছি আমাদের প্রতিষ্ঠানের অন্যতম ব্যক্তিত্ব অধ্যক্ষ মাননীয় নিত্যানন্দ সাহা মহাশয়ের প্রেরনার জন্য। আমি চিরকৃতজ্ঞ আড়কামা উচ্চ বিদ্যালয়ের প্রধান শিক্ষক মাননীয় মৃত্যুঞ্জয় হেম্ব্রম মহাশয়ের কাছে অনেক সহযোগিতার জন্য। তাছাড়া আমার সহপাঠীদের সহযোগিতা ছাড়া আমি এই কার্যক্রমটি সম্পন্ন করতে পারতাম না, তাই আমি তাদের সকলের কাছে আন্তরিকভাবে কৃতজ্ঞ।

কৃতজ্ঞতার্থে
সৌমেন দাঁ

সূচিপত্র

ভূমিকা (Introduction)

মানুষের নানাবিধ উন্নতির মূলে আছে শিক্ষা। এই শিক্ষার সবচেয়ে বড়ো মাধ্যম হল বিদ্যালয়। বিদ্যালয় হল একটি সামাজিক প্রতিষ্ঠান। বিদ্যালয়ে শিক্ষাকেন্দ্রীক কার্যাবলীর পাশাপাশি সমাজকেন্দ্রীক কার্যাবলীও করে থাকে। প্রত্যেক শিক্ষার্থীকে সমাজজীবনের উপযোগী করে গড়ে তোলা, অভিজ্ঞতা ও প্রচেষ্টার দ্বারা সংস্কৃতি ও কৃষ্টির ধারাকে পরিবর্তন করা ইত্যাদি হল বিদ্যালয়ের কর্তব্য। According to John Dewey, "School is simplified, purified and better balanced society."

তাই একটি school activity Seavey report এর মাধ্যমে কোনো স্কুলের সর্বাঙ্গীন ব্যবস্থা, সার্থকতা, শিক্ষার্থীদের গঠনপাঠন, শিক্ষক-শিক্ষিকাদের কর্তব্যাবলী, বিদ্যালয়ের নিয়ম নীতি ইত্যাদি নানাবিধ বিষয়ে সামগ্রিক ধারণা পাওয়া যায়। একটি Survey Report এ কোনো বিদ্যালয়ের ভালো দিকগুলি থাকলেও কিছু কিছু ত্রুটি-বিচ্যুতিও থেকে যায়।

বিদ্যালয় সমীক্ষার উদ্দেশ্য (objectives)

আড়কান্দা উচ্চ বিদ্যালয়ের স্কুল সমীক্ষা করতে গিয়ে আমি বিভিন্ন কতকগুলি বিষয়ের সাথে সম্পর্কিত হয়ে উঠি। যে কোনো প্রকল্পের বিভিন্ন কতকগুলি উদ্দেশ্য থাকে; আমাদের সমীক্ষার উদ্দেশ্যগুলি নিম্নরূপ-

- বিদ্যালয়ের সার্বিক শিক্ষা প্রক্রিয়া তথা গঠন গঠন এর নানা দিক তুলে ধরা।
- বিদ্যালয়ের শৈক্ষণিক এবং সহ শৈক্ষণিক কার্যাবলী সম্বন্ধে ধারণা তৈরি করা।
- বিদ্যালয়ের সার্বিক পরিকাঠামো ও সমাজের মধ্যে পারস্পরিক সম্পর্ক তৈরিতে সহায়তা করা।
- এছাড়া বিদ্যালয়ের বিভিন্ন সুব্যবস্থাপনের ক্ষেত্রে দুর্বলতার দিকগুলি চিহ্নিত করে এবং তার আরো উন্নতি ঘটিয়ে বিদ্যালয়ের ভবিষ্যৎ একটি সুন্দর সুপরিকল্পিত পরিচালিত এবং আদর্শরূপে গড়ে তুলতে সাহায্য করা।

আমাদের প্রকল্পের উদ্দেশ্য এই সমস্ত বিষয়গুলিকে তাৎপর্যপূর্ণ করে তুলে ধরা।

চিত্র -ঃ আড়কামা উচ্চ বিদ্যালয়ের প্রশাসনভবন

Data related to the school

বিদ্যালয়ের নাম -: আড়কান্দা উচ্চ বিদ্যালয়।

বিদ্যালয়টির প্রতিষ্ঠা কাল -: 1970 সাল।

বিদ্যালয়টির পূর্ব ইতিহাস -:

বিদ্যালয়টি 1970 সালে প্রতিষ্ঠিত হয় যখন শ্রেণি সর্বনিম্ন। তারপর 2006 সালে মাধ্যমিক স্তরে উন্নীত হয়। বর্তমানে এই স্কুলে অনেক ছাত্রছাত্রী পড়াশোনা করে।

বিদ্যালয়ের ফলাফল -:

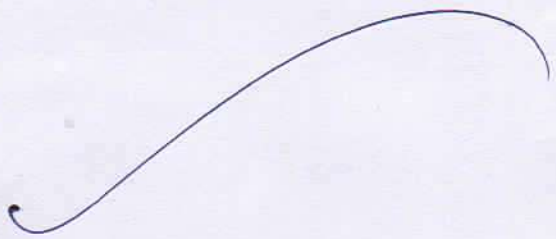
এটি একটি গ্রামীন এলাকায় অবস্থিত একটি বিদ্যালয়। তাই সাধারণভাবে প্রচুর ছাত্র-ছাত্রী এখান থেকে ভালো নাম্বারসহ বেরিয়েছে। এই বিদ্যালয়ে পড়াশুনার মান মোটামুটি ভালো। মাধ্যমিকে 80% এর কাছাকাছি প্রত্যেকবছরই পাসলস্য হার।

বিদ্যালয়টির সাফল্য -:

2013 সালে সাতক্ষীরা জেলা মাঝারিমানের বিদ্যালয় টি তৃতীয় স্থান অর্জন করেছিল। তাছাড়া বহু-ছাত্র-ছাত্রী এই বিদ্যালয়টিতে পড়াশুনা করে বর্তমানে বহু জায়গায় চাকরি পেয়েছে।

আড়কান্দা উচ্চ বিদ্যালয়টির অবস্থান (Location)

স্থানাঙ্ক -ঃ 23.0° উত্তর 86.9° পূর্ব



ARKAMA HIGH SCHOOL

Estd. – 1970
Board's Index No. – U1-139 • UDISE CODE – 19131006705
Vocational Code No. – 5118
P.O. – ARKAMA • BLOCK – KHATRA • SUB-DIVISION - KHATRA • DIST. – BANKURA

Ref. No ..... Date .....
From : President / Headmaster

Enrollment upto class X 2022 (Category wise and Class wise)

Last update on 24-09-2022

CLASS	Category wise										TOTAL		
	General		SC		ST		OBC-A		OBC-B				
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls			
V	3	4	15	12	4	9	0	0	9	8	Boys	31	64
											Girls	33	
VI	4	5	15	13	7	4	0	0	6	8	Boys	32	62
											Girls	30	
VII	7	8	24	20	3	4	0	0	12	13	Boys	46	91
											Girls	45	
VIII	9	5	19	19	3	6	0	0	11	6	Boys	42	78
											Girls	36	
IX	9	10	22	28	6	6	0	0	1		Boys	38	82
											Girls	44	
X	6	10	19	11	5	7	0	0			Boys	30	58
											Girls	28	
TOTAL	38	42	114	103	28	36	0	0	39	35			
	80		217		64		00		74		435		

TOTAL BOYS = 31 + 32 + 46 + 42 + 38 + 30 = 219

TOTAL GIRLS = 33 + 30 + 45 + 36 + 44 + 28 = 216

Signature of Headmaster
ARKAMA HIGH SCHOOL

চিত্র – ০১ আড়কামা উচ্চবিদ্যালয়ের শিক্ষার্থী সম্বন্ধীয় তথ্য

Data related to the Students

আড়কামা হাইস্কুলে সপ্তম শ্রেণি থেকে দ্বাদশ শ্রেণি পর্যন্ত ছাত্র-ছাত্রী সংক্রান্ত তথ্য -:

সপ্তম শ্রেণি -:

	General	SC	ST	OBC-A	OBC-B	TOTAL
ছাত্র	3	15	4	0	9	31
ছাত্রী	4	12	9	0	8	33
মোট	7	27	13	0	17	64

অষ্টম শ্রেণি -:

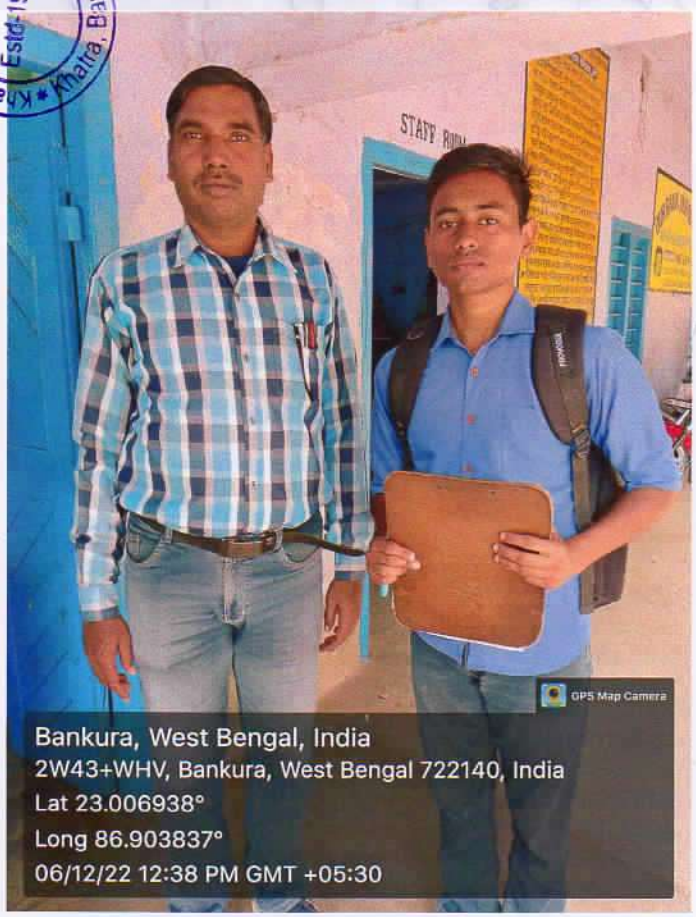
	General	SC	ST	OBC-A	OBC-B	TOTAL
ছাত্র	4	15	7	0	6	32
ছাত্রী	5	13	4	0	8	30
মোট	9	28	11	0	14	62

নবম শ্রেণি -:

	General	SC	ST	OBC-A	OBC-B	TOTAL
ছাত্র	7	24	3	0	12	46
ছাত্রী	8	20	4	0	13	45
মোট	15	44	7	0	25	91

দশম শ্রেণি -:

	General	SC	ST	OBC-A	OBC-B	TOTAL
ছাত্র	9	19	3	0	11	42
ছাত্রী	5	19	6	0	6	36
মোট	14	38	9	0	17	78



চিত্র-০১ আদিবাসী উচ্চ বিদ্যালয়ের প্রবীন শিক্ষক মহাশয়ের সাথে কথোপকথন

Adibasi Mahavidyalaya * Khatra, Bankura * Estd-1979

নবম শ্রেনি -

	General	SC	ST	OBC-A	OBC-B	TOTAL
ছাত্র	9	22	6	0	1	38
ছাত্রী	10	28	6	0	0	44
মোট	19	50	12	0	1	82

দশম শ্রেনি -

	General	SC	ST	OBC-A	OBC-B	TOTAL
ছাত্র	6	19	5	0	0	30
ছাত্রী	10	11	7	0	0	28
মোট	16	30	12	0	0	58

∴ মোট শিক্ষার্থী সংখ্যা = 64 + 62 + 91 + 78 + 82 + 58

= 435

চিত্র-১ তাড়ুকমনা উচ্চ বিদ্যালয়ের সাপ্তাহিক খাদ্যতালিকা।

Data related to the teachers

আড়কামা উচ্চ বিদ্যালয়ের শিক্ষক - শিক্ষিকা সংক্রান্ত তথ্য :-

বিদ্যালয়ের প্রবীন শিক্ষকের নাম :- মৃত্যুঞ্জয় কুলু।

বিদ্যালয়ের সহ - প্রবীন শিক্ষকের নাম :- ধ্রুবেশ রায়।

শিক্ষকের সংখ্যা :- 10 জন।

শিক্ষিকার সংখ্যা :- 3 জন।

আংশিক শিক্ষকের সংখ্যা :- 1 জন।

অতিথি শিক্ষকের সংখ্যা :- 2 জন।

লাইব্রেরিয়ানের সংখ্যা :- 1 জন।

ল্যাবের স্টাফ সংখ্যা :- 1 জন।

ভৃত্য পিয়ন সংখ্যা :- 1 জন।

Infrastructure related information

শ্রেনিকক্ষের সংখ্যা -: সমীক্ষায় দেখা যাচ্ছে আড়কান্দা উচ্চবিদ্যালয়ে শ্রেনিকক্ষের সংখ্যা সন্তোষ্য। আড়কান্দা উচ্চবিদ্যালয়টিতে মোট 10 টি শ্রেনি কক্ষ রয়েছে।

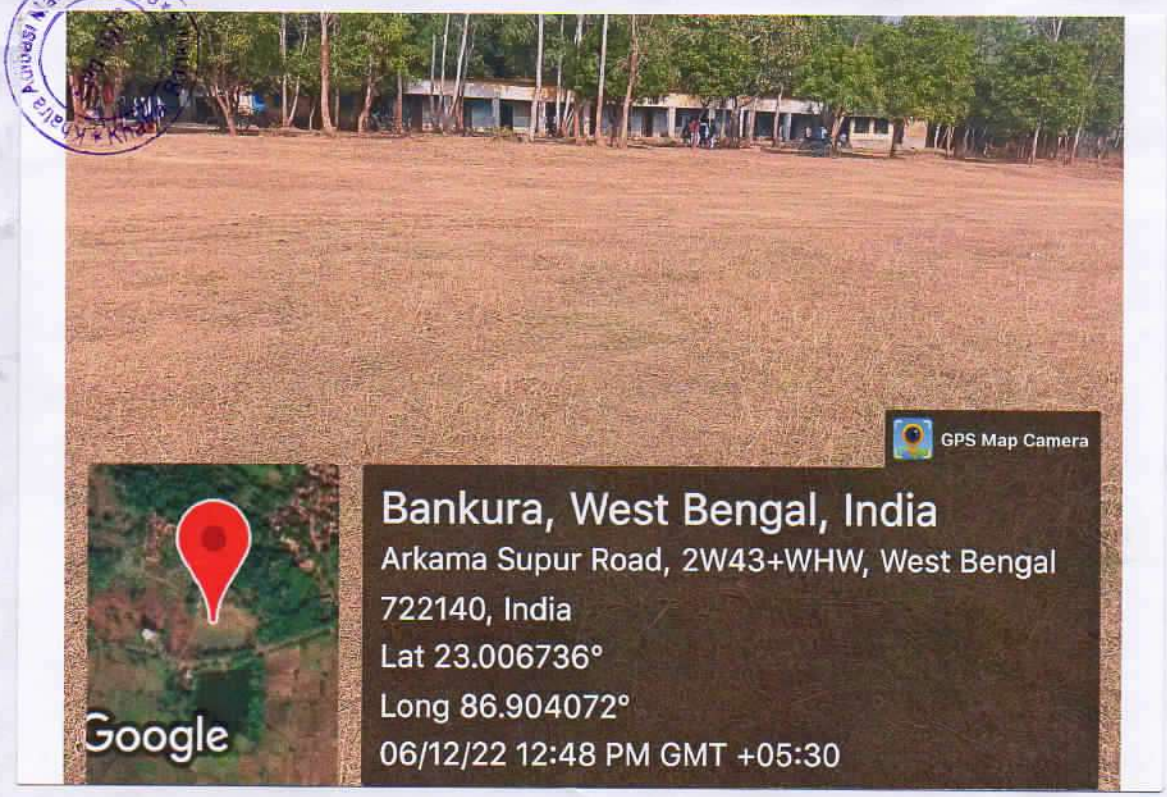
শৌচালয় -: আড়কান্দা উচ্চবিদ্যালয়ে বালকদের জন্য 4 টি আর বালিকাদের জন্য 3 টি শৌচালয় আছে

কমন রুম -: আড়কান্দা উচ্চবিদ্যালয়ে ছাত্রছাত্রীদের জন্য কোনো কমন রুম নেই।

খাবার রুম -: আড়কান্দা উচ্চবিদ্যালয়টি একটি খাবার রুম আছে শিক্ষার্থীদের জন্য।

র‍্যাম্প -: প্রতিবন্ধী ছাত্রছাত্রীদের শ্রেনিকক্ষে যেতে যাতে অসুবিধা না হয় তার জন্য আড়কান্দা উচ্চবিদ্যালয়টিতে 3 টি র‍্যাম্প আছে।

গ্রন্থাগার -: শিক্ষাবিধি অনুযায়ী যে কোনো একটি আদর্শ বিদ্যালয়ে গ্রন্থাগার থাকা একান্ত প্রয়োজন। আড়কান্দা উচ্চবিদ্যালয়টিতে একটি গ্রন্থাগার আছে যেখানে নতুন ক্লাস শুরু হতে না হতেই নতুন বই প্রদান করা হয় এবং এছাড়াও নানা ধরনের উপন্যাস, গল্পের বই ইত্যাদি বই পাওয়া যায়।



চিত্র-৩ আড়কমা উচ্চ বিদ্যালয়ের
বোলার মাঠ.

Curriculam related information

পশ্চিমবঙ্গে মাধ্যমিক পরিষদে যে পাঠ্যসূচি রয়েছে সেই পাঠ্যক্রম অনুযায়ী আড়বহমা উচ্চ বিদ্যালয়টিতে পড়ানো হয়। তাছাড়া শিক্ষিত পড়া ছাত্রছাত্রীদের আলাদা করে এখানে পড়ানো হয়। এগুলি ছাড়াও কর্মশিক্ষা ও পরিবারশিক্ষা সংক্রান্ত বিষয়গুলিও শেখানো হয়।

আড়বহমা উচ্চবিদ্যালয়টিতে যেসব বিষয়গুলি পড়ানো হয় সেগুলি নিম্নরূপ—

(1) বাংলা
(2) ইংরেজী
(3) গনিত
(4) ইতিহাস
(5) ভূগোল
(6) জীবনবিজ্ঞান
(7) ভৌতবিজ্ঞান
(8) সংস্কৃত
(9) কর্মশিক্ষা
(10) পরিবারশিক্ষা

Data related to School environment

আড়েকমা উচ্চ বিদ্যালয়টির ভূমির ডাটা L অক্ষরের ন্যায়। বিদ্যালয়টিতে মোট 2 টি গেট আছে। বিদ্যালয়টি একদম মেনরোডের সামনেই, তাই বলা যায় যোগাযোগ ব্যবস্থা ভালো। তাছাড়া বিদ্যালয়টির আশেপাশে কোনো কলকারখানা নেই তাই বিদ্যালয়টির পরিবেশ শান্ত এবং দূষনের পরিমান নেই বললেই চলে। বিদ্যালয় -টির প্রতিটি শ্রেনিকক্ষের বাইরে একটি করে ডাস্টবিন আছে। বিদ্যালয়টিতে একটি ফুলের বাগান আছে এবং 80×80 বর্গফুটের একটি খেলার মাঠ আছে। বিদ্যালয়টির ঠিক মাঝখানে একটি বড় গাছ আছে। বিদ্যালয়টিতে শিক্ষার্থীদের পানীয় জলের জন্য দুটি টিউবেল এবং একটি ডেপ কল আছে।

সহপাঠক্রমিক কার্যাবলী (Extra curricular Activities)

আমাদের এই বিদ্যালয়ের প্রবর্তিত(যার) সহপাঠক্রমিক কার্যাবলীর তালিকা -

(i) ক্রীড়ানুষ্ঠান, আন্তঃস্কুল ফুটবল প্রতিযোগিতা, বার্ষিক ক্রীড়া প্রতিযোগিতা।

(ii) বিবেকানন্দের জন্মদিবস, সুভাষচন্দ্র বোসের জন্মদিবস, রবীন্দ্রজয়ন্তী, বিদ্যাসাগরের জন্মদিবস, সরস্বতী বন্দনা জন্মদিবস পালন করা হয়।

(iii) বিতর্ক অনুষ্ঠান, প্রদর্শনী, নাট্যানুষ্ঠান, বিচিত্রানুষ্ঠান।

(iv) নিরক্ষতা দূরীকরণ, বাধ্যতামূলক প্রাথমিক শিক্ষা আন্দোলনে অংশগ্রহণ।

(v) উদ্যান রচনা, বাজার তৈরি।

(vi) ক্রীড়া দিবস পালন।

শিক্ষার্থীদের জন্য নিয়ম ও নীতি (Rules and Policy)

- সকল সাইনের সময় -: 10:50 A.M - 4:30 P.M
- বিরতি -: 1:50 P.M - 2:30 P.M
- প্রার্থনা সময়কাল -: 10:45 A.M
- শিক্ষার্থীর সংখ্যা -: 7 টি
- পোশাক -:

(ছেলেদের) -: সাদা জামা, নীল প্যান্ট, সাদা মোজা, কালো জুতো, শীতে নীল সুয়েটার।

(মেয়েদের) -: সাদা ও নীলের স্ট্রাইপড কামিজ, নীল সালোয়ার, সাদা মোজা, কালো জুতো, শীতে নীল সুয়েটার।

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Bankura

Discussion

বিদ্যালয়টির ভালো দিকগুলি

আড়কান্দা উচ্চ বিদ্যালয়টির ভালো দিকগুলি হল নিম্নরূপঃ

- বিদ্যালয়টি একদম মেনরোডের পাশেই, তাই যোগাযোগ ব্যবস্থা ভালো।
- Book-Bank এর ব্যবস্থা আছে।
- ছাত্রছাত্রীদের নিয়মিত Health check up এর ব্যবস্থা আছে।
- প্রতিটি পরীক্ষার ফল প্রকাশের পর Parent-Teacher meeting এর ব্যবস্থা আছে।
- প্রতি বছর শিক্ষামূলক ভ্রমন করানো হয়।

বিদ্যালয়টির দুর্বল দিকগুলি

আড়কান্দা উচ্চ বিদ্যালয়টির দুর্বল দিকগুলি নিম্নরূপঃ

- আড়কান্দা উচ্চ বিদ্যালয়টির কিছু ক্লাস রুম পুরানো হওয়াতে ভেঙ্গে গিয়েছে সেগুলি মেরামত করার প্রয়োজন আছে।
- বিদ্যালয়টিতে বালকদের জন্য 4 টি ও বালিকাদের জন্য 3 টি শৌচালয় আছে। আরো কিছু শৌচালয় তৈরি করার প্রয়োজন আছে।
- বিদ্যালয়টিতে ৯ জনিত শিক্ষকের সংখ্যা খুবই কম। আরও জনিত শিক্ষক থাকলে ভালো হয়।

উপসংহার (conclusion)

আমাদের ষষ্ঠ সেমিস্টারে আমরা 'School Activity Survey' এর জন্য আমি আড়কান্দা উচ্চ বিদ্যালয় গিয়েছিলাম। সেখানে বিদ্যালয়ের বিভিন্ন বিষয়ের উপর যেসকল তথ্য সংগ্রহ করেছিলাম, সেগুলি যথাযথ বিশ্লেষন ও পর্যালোচনা এর দ্বারা আমি যে প্রতিবেদনটি লিখেছি, সেটি ভালোভাবে অনুধাবন করলে দেখা যাবে যে, আড়কান্দা উচ্চ বিদ্যালয়টি একটি আদর্শ বিদ্যালয়ের পরিচয় বহন করছে। সেখানকার বিদ্যালয়ের সবরকম কর্ম সুষ্ঠুভাবে যথাযথ পদক্ষেপের মাধ্যমে সম্পন্ন হচ্ছে। এছাড়াও বিদ্যালয়ের সকল শিক্ষার্থীদের যথাযথ প্রগতি ও মানসিক বিকাশ সাধনে কার্যকরী ভূমিকা পালন করছে। বিদ্যালয়ের শিক্ষন - শিখন পরিবেশটি খুবই আদর্শ যা শিক্ষার্থীদের বিদ্যালয়ে উপস্থিতির পরিমানকে ত্বরান্বিত করে।

19/01/2023
Head
Department of Education
Khalra Adibasi Mahavidyalaya

THE END

Khatra Adibasi Mahavidyalaya

P.O.: Khatra, Dist. Bankura, West Bengal, Pin: 722140
Phone: 8900057220 E-mail: *khatraacollege@gmail.com/ kacollege@rediffmail.com*
Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Khatra Adibasi Mahavidyalaya * Estd-1979 * Khatra, Bankura

Date 07/12/2022

Certificate of Project Completion

This is to certify that the following student of **5th semester**, has successfully completed the Field Work titled **"School Activity Survey" [Course Code: AP/EDN/504/SEC-3]** under the guidance of **Shri Akinchan Pal, Faculty & HoD, Department of Education, Khatra Adibasi Mahavidyalaya** throughout the 4th semester in the academic year 2022-23.

This project work/field work has been evaluated and found to meet the requirements and standards set by the Department of Education.

We commend the following student for his/her hard work, dedication, and commitment to excellence.

Name	UID	Phone
Soumen Dan	20111202001	8001880413

Khatra Adibasi Mahavidyalaya * Estd-1979 * Khatra, Bankura

Supervisor

Head
Department of Education
Khatra Adibasi Mahavidyalaya

Headmaster
Arkama High School
P.O.-Arkama, Dist.-Bankura

HM/TIC

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

Principal

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

(PROJECT WORK 2022-23)

Exploration of Bishnupur's Temple Architecture and Visit to Acharya Jogesh Chandra Purakriti Bhaban (District Museum)

PAPERCODE: UG/HIST/405 SEC-2 (H)
AP/HST/405/SEC- 2 (P)
AP/HST/305/SEC-1 (P)
AH/HST/304 SEC- 1 (H)
UG/HIST/602 C-14 (H)
APHST/601DSE- 1B (P)

Completed by

4th and 6th Semester Students,

DEPARTMENT OF HISTORY

UNDER THE GUIDANCE OF

- DR. ALOKE BHOWMIK
- SREERUPA BHATTACHARJEE

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Date:21.02.2023

To

The Principal

Khatra Adibasi Mahavidyalaya

Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct Educational Tour at Bishnupur,Bankura Exploring Temple Architecture of Bishnupur and visit Acharya Jogesh Chandra Purakriti Bhaban (District Museum) Bishnupur, Bankura, West Bengal on 05.03.2023 .

Respected Sir/Madam,

I am writing to request your permission to conduct an educational tour for the students of

4th and 6th Semester Students

SYLLABUS TO BE COVERED - IV SEM HONS-UG/HIST/405 SEC-2: Understanding Popular Culture IV SEM PROGRAMME- AP/HST/405/SEC- 2:Museum & Archives in India. VI SEM HONS-UG/HIST/602 C-14: History of South-West Bengal (1740-1947) VI SEM PROGRAMMEE-APHST/601DSE- 1B/History of South-West Bengal (1740-1947)

to Bishnupur, Bankura, on 05.03.2023. This tour aims to provide students with a unique learning experience outside the classroom.

Objectives of the tour:

- **Exploration of Bishnupur's Temple Architecture:** Bishnupur is renowned for its terracotta temples, known for their unique architectural style. A guided tour of these temples will offer valuable insights into the region's art, history, and culture.
- **Visit to Acharya Jogesh Chandra Purakriti Bhaban (District Museum):** This museum houses a rich collection of artifacts showcasing the cultural heritage of Bishnupur and its surrounding areas. A visit here will enrich students' understanding of the past and foster a deeper appreciation for their heritage.

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Date:21.02.2023

Tour details:

- **Date:** 05.03.2023
- **Location:** Bishnupur, Bankura, West Bengal
- **Participants:** Students of 4th and 6th Semester Students (67 Students) and accompanying four teachers
- **Transportation:** Bus

Safety measures:

The safety and well-being of the students are our top priorities. We have prepared a comprehensive safety plan, which includes:

- Providing each student with an emergency contact number
- Carrying a first-aid kit

Request for permission:

We kindly request your permission to proceed with this educational tour. We firmly believe that this tour will significantly contribute to the students' academic and overall development.

Thank you for your time and consideration. We eagerly await your approval.

Sincerely,

Head
Department of History
Khatra Adibasi Mahavidyalaya

Dr.Aloke Bhowmik, Assistant Professor and

HOD, Department of History

E mail id: hist.aloke@kamv.ac.in

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Date:22.02.2023

To: Dr. Aloke Bhowmik, Assistant Professor and HOD, Department of History

From: The Principal, Khatra Adibasi Mahavidyalaya

Subject: Permission for Educational Tour to Bishnupur, Bankura

Dear Dr. Bhowmik,

I am pleased to grant permission for the Department of History to conduct an educational tour for the students of 4th and 6th semesters to Bishnupur, Bankura, on 5th March 2023. The proposed tour aligns with the academic objectives of the mentioned courses and promises to provide valuable experiential learning opportunities for the students.

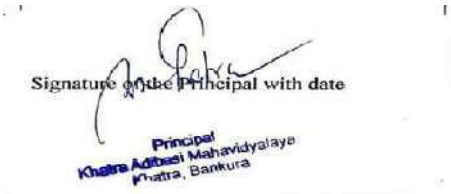
I acknowledge the well-defined objectives of the tour, including the exploration of Bishnupur's unique temple architecture and the visit to the Acharya Jogesh Chandra Purakriti Bhaban (District Museum). These experiences are likely to enrich the students' understanding of the region's history, art, and culture.

I appreciate the Department's commitment to student safety, as evidenced by the comprehensive safety plan outlined in your proposal. Please ensure that all safety measures are meticulously followed during the tour.

Please submit a detailed report on the tour upon its completion, highlighting the academic outcomes and overall impact on the students.

Wishing you and the students a successful and enriching educational tour.

With Thanks,



22.02.2023

Dr.Nityananda Patra

Principal

Khatra Adibasi Mahavidyalaya

KHATRA ADIBASI MAHAVIDYALAYA
DEPARTMENT OF HISTORY
EDUCATIONAL TOUR AT BISHNUPUR ,BANKURA ,ON 05.03.2023
LIST OF PARTICIPANTS

LIST OF PARTICIPANTS:

Sem & Rollno	U-Roll no.	Student Name	Phone No	Student ID
IV-154	21111104025	ANINDITA KARMAKAR	6294753704	1112101854
IV-157	21111104029	MAMPI KARMAKAR	7679593011	1112100704
IV-158	21111104006	PIU KARMAKAR	9547592206	1112102379
IV-164	21111104024	PUJA GARAI	7866070028	1112102964
IV-169	21111104032	BARNALI SING	9002709128	1112104001
IV-175	21111104042	MITU MANDAL	7583933581	1112101006
IV-177	21111104008	RADHA KARMAKAR	7857092556	1112104421
IV-180	21111104028	PAMPA KARMAKAR	9083524435	1112101734
IV-182	21111104048	SHAMPA KARMAKAR	7584919102	1112101864
IV-188	21111104030	RUMA GORAI	7029023770	1112101489
IV-191	21111104050	DEBSHIKA MAHATA	9883375619	1112104281
IV-199	21111104020	SARAMA SAHU	8016176071	1112101223
IV-201	21111104039	ANIMA SARDAR	7865903578	1112102673
IV-211	21111104031	PUJA CHAND	9635447091	1112101456
IV-1539	21111104017	SUDESHNA SINGHA	8515988173	1112100565

Aloke Bhowmik

Sem & Rollno	U-Roll no.	Student Name	Phone No
VI-178	19111104027	TRIPTI PATRA	9564090930
VI-194	20111104002	KRISHNA MAHAPATRA	9800915352
VI-178	19111104027	TRIPTI PATRA	9564090930
VI-164	19111104017	DISHA GANGULY	7319126857
VI-206	20111104015	TANUSHREE BAURI	8016488543
IV-		SANGHA MITRA KARMAKAR	
IV-180	20111104042	MITA MANDAL	6294830544
IV-157	21111104029	MAMPI KARMAKAR	7679593011
IV-211	21111104031	PUJA CHAND	9635447091
II-204	22111104019	SONALI KARMAKAR	8710075748
II-181	22111104020	PRIYANKA KARMAKAR	8617532460
II-203	22111104031	SOMA BIT	7908429416
II-158	22111104035	BEAUTI GOPE MANDAL	9732282196
II-190	22111104014	RINKU MAHATA	6295184762
II-1402	22111104010	SEFALI MANDAL	7063421852

Aloke Bhowmik

VI-178	20111104045	ANWESHA KARAK	9883353771
VI-147	20111104004	SAMPA BAURI	9933168136
VI-150	20111104054	MITHU PATRA	9883270625
VI-144	20111104046	PRIYA PATRA	9635353723
VI-168	20111104053	MINAKSHMI PANDA	8116835564
VI-153	20111104021	LAKSHMI MAHATA	8159840907
188	20111104020	LAXMI MANDAL	8116281608
IV-158	21111104006	PIU KARMAKAR	9547592206
IV177	21111104008	RADHA KARMAKAR	7857092556
IV-158	21111104028	PAMPA KARMAKAR	9083524435
II-220	22111104024	TANUSHREE KARMAKAR	8167706838
II-157	22111104043	BARSHA SINGHAMAHAPATRA	7601904528
II-189	22111104055	RINA DULEY	8972198113
II-170	22111104041	KOYEL MANDAL	9883343836
		SANCHITA MAHATA	

VI-148	20111104010	KAILASH BAURI	7364028065
IV-164	22111104054	JISHU KARMAKAR	
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VI-444	20111204046	SIDDHISWAR MURMU	7583989506
IV		MALLIKA MAHATA	
IV-217	9749371989	PAMPA KARMAKAR	9749371989

Aloke Bhowmik

VI-148	20111104010	KAILASH BAUR	7364028065
IV-164	22111104054	JISHU KARMAKAR	
IV-166	22111104038	JIT BARAT	9641177485
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VI-444	20111204046	SIDDHISWAR MURMU	7583989506
IV		MALLIKA MAHATA	
IV-217	9749371989	PAMPA KARMAKAR	9749371989

Aloke Bhowmik

Aloke Bhowmik
2022-23
Head
Department of History
Khatra Adibasi Mahavidyalaya

KHATRA ADIBASI MAHAVIDYALAY

KHATRA :: BANKURA

DEPARTMENT OF HISTORY

Educational Tour at Bishnupur, BANKURA ON 05.03.2023

Educational Tour Report: Exploring Temple Architecture of Bishnupur and visit Acharya Jogesh Chandra Purakriti Bhaban (District Museum) Bishnupur, Bankura, West Bengal

Date: March 5, 2023

Location: Bishnupur, Bankura

Educational Tour Report: Exploring Temple Architecture of Bishnupur and visit Acharya Jogesh Chandra Purakriti Bhaban (District Museum) Bishnupur, Bankura, West Bengal

Organized by: Department of History

Target Group: 4th and 6th Semester Students

SYLLABUS-

IV SEM HONS-UG/HIST/405 SEC-2: Understanding Popular Culture

IV SEM PROGRAMME- AP/HST/405/SEC- 2:Museum & Archives in India.

VI SEM HONS-UG/HIST/602 C-14: History of South-West Bengal (1740-1947)

VI SEM PROGRAMMEE-APHST/601DSE- 1B/History of South-West Bengal (1740-1947)

Introduction:

On the 5th of March 2023, the Department of History at Khatra Adibasi Mahavidyalaya organized an educational tour to Bishnupur, Bankura, with the primary objective of exploring the rich heritage of terracotta temples and gaining insights into temple architecture. The students from the 4th and 6th semesters enthusiastically participated in this educational endeavor.

Journey to Bishnupur:

The day began with an early morning departure from the college premises. The journey to Bishnupur was filled with excitement and anticipation as students engaged in lively discussions about the architectural marvels they were about to witness. The scenic route to Bishnupur added to the overall charm of the trip.

Terracotta Temples Exploration:

Upon reaching Bishnupur, the students were greeted by the awe-inspiring sight of terracotta temples that adorned the landscape. The main focus was on understanding the intricacies of temple architecture, exploring the historical significance of each temple, and appreciating the artistic brilliance displayed in the terracotta carvings.

The group visited prominent temples such as Jor-Bangla Temple, Rasmancha(UNESCO declared Heritage Site), and Madan Mohan Temple. The detailed carvings on the temple walls, depicting mythological stories, historical events, and cultural motifs, provided a rich tapestry of the region's cultural heritage. Students actively engaged with local guides who provided valuable insights into the symbolism and craftsmanship of the terracotta art.

Museum Visit - Jogesh Chandra Purakirti Sangrahashala:

In the afternoon, the group proceeded to Jogesh Chandra Purakirti Sangrahashala, a local museum in Bishnupur. The museum housed a remarkable collection of artifacts, sculptures,

and historical relics related to the region's cultural evolution. Students had the opportunity to closely observe artifacts dating back centuries, gaining a deeper understanding of the historical context of the terracotta temples they had visited earlier.

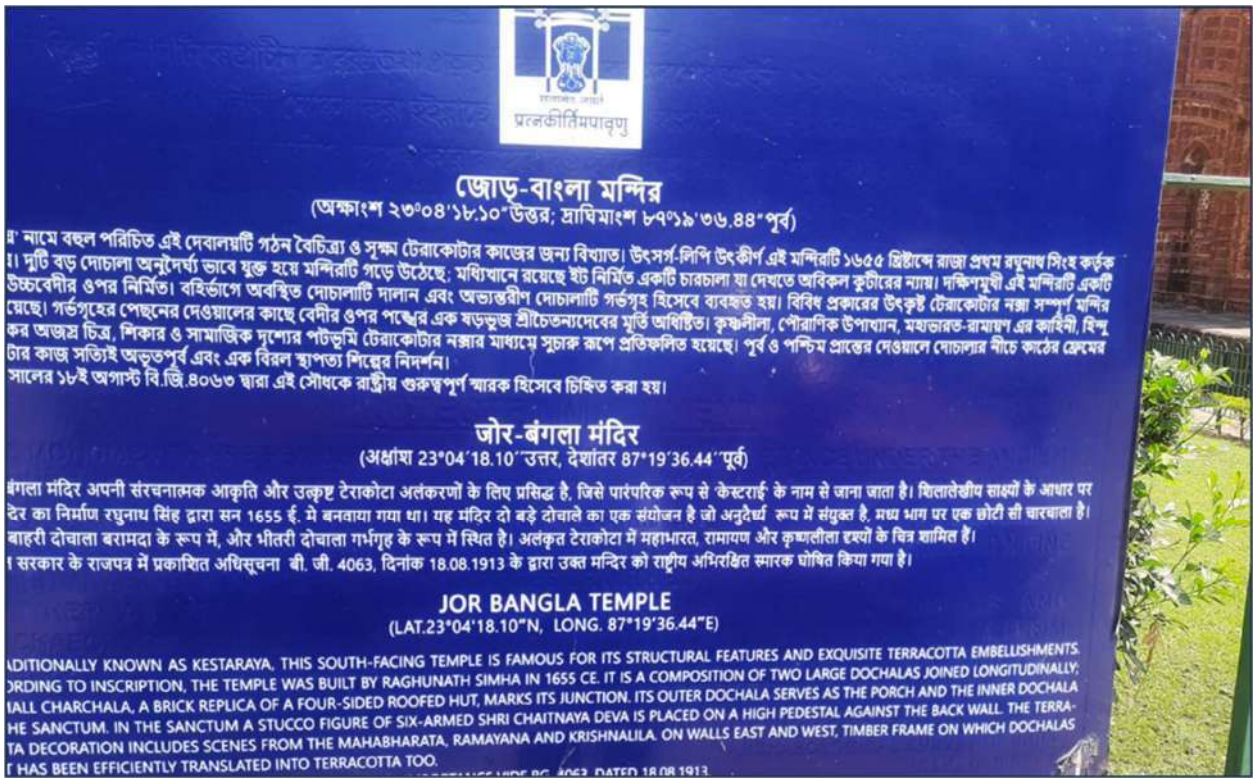
Interactive Sessions and Discussions:

Throughout the tour, the department organized interactive sessions and discussions, allowing students to share their observations and reflections. Faculty members facilitated discussions on the cultural, historical, and architectural significance of the sites visited. These sessions encouraged critical thinking and a holistic understanding of the subject matter.

Conclusion:

The educational tour to Bishnupur proved to be an enriching and enlightening experience for the students of Khatra Adibasi Mahavidyalaya. It not only broadened their understanding of temple architecture and historical artifacts but also fostered a deep appreciation for the cultural heritage of the region. The tour successfully aligned with the department's commitment to providing a well-rounded education that extends beyond the confines of the classroom.

The students returned with a newfound enthusiasm for history and a sense of pride in being part of an educational institution that values experiential learning. The Department of History looks forward to organizing more such educational tours to further enhance the academic and cultural exposure of its students.


सत्यमेव जयते
प्रत्नकीर्तिमपावृणु
জোড়-বাংলা মন্দির
(অক্ষাংশ ২৩°০৪'১৮.১০"উত্তর; দ্রাঘিমাংশ ৮৭°১৯'৩৬.৪৪"পূর্ব)
য়' নামে বহুল পরিচিত এই দেবালয়টি গঠন বৈচিত্র্য ও সূক্ষ্ম টেরাকোটার কাজের জন্য বিখ্যাত। উৎসর্গ-লিপি উৎকীর্ণ এই মন্দিরটি ১৬৫৫ খ্রিষ্টাব্দে রাজা প্রথম রঘুনাথ সিংহ কর্তৃক
য়। দুটি বড় দোচালা অনুদৈর্ঘ্য ভাবে যুক্ত হয়ে মন্দিরটি গড়ে উঠেছে; মধ্যিখানে রয়েছে ইট নির্মিত একটি চারচালা যা দেখতে অবিকল কুটীরের ন্যায়। দক্ষিণমুখী এই মন্দিরটি একটি
উচ্চবেদীর ওপর নির্মিত। বহির্ভাগে অবস্থিত দোচালাটি দালান এবং অভ্যন্তরীণ দোচালাটি গর্ভগৃহ হিসেবে ব্যবহৃত হয়। বিবিধ প্রকারের উৎকৃষ্ট টেরাকোটার নক্সা সম্পূর্ণ মন্দির
য়েছে। গর্ভগৃহের পেছনের দেওয়ালের কাছে বেদীর ওপর পদ্মের এক ষড়ভুজ শ্রীচৈতন্যদেবের মূর্তি অধিষ্ঠিত। কৃষ্ণলীলা, পৌরাণিক উপাখ্যান, মহাভারত-রামায়ণ এর কাহিনী, বিষ্ণু
কর অজস্র চিত্র, শিকার ও সামাজিক দৃশ্যের পটভূমি টেরাকোটার নক্সার মাধ্যমে সুচারু রূপে প্রতিফলিত হয়েছে। পূর্ব ও পশ্চিম প্রান্তের দেওয়ালে দোচালার নীচে কাঠের ফ্রেমের
টার কাজ সত্যিই অভূতপূর্ব এবং এক বিরল স্থাপত্য শিল্পের নিদর্শন।
সালের ১৮ই অগাস্ট বি.জি.৪০৬৩ দ্বারা এই সৌধকে রাষ্ট্রীয় গুরুত্বপূর্ণ স্মারক হিসেবে চিহ্নিত করা হয়।
जोर-बंगला मंदिर
(अक्षांश 23°04′18.10″उत्तर, देशांतर 87°19′36.44″पूर्व)
बंगला मंदिर अपनी संरचनात्मक आकृति और उत्कृष्ट टेराकोटा अलंकरणों के लिए प्रसिद्ध है, जिसे पारंपरिक रूप से 'केस्टराई' के नाम से जाना जाता है। शिलालेखीय साक्ष्यों के आधार पर
दिर का निर्माण रघुनाथ सिंह द्वारा सन 1655 ई. मे बनवाया गया था। यह मंदिर दो बड़े दोचाले का एक संयोजन है जो अनुदैर्ध्य रूप में संयुक्त है, मध्य भाग पर एक छोटी सी चारचाला है।
बाहरी दोचाला बरामदा के रूप में, और भीतरी दोचाला गर्भगृह के रूप में स्थित है। अलंकृत टेराकोटा में महाभारत, रामायण और कृष्णलीला दृश्यों के चित्र शामिल हैं।
। सरकार के राजपत्र में प्रकाशित अधिसूचना बी. जी. 4063, दिनांक 18.08.1913 के द्वारा उक्त मन्दिर को राष्ट्रीय अभिरक्षित स्मारक घोषित किया गया है।
JOR BANGLA TEMPLE
(LAT.23°04'18.10"N, LONG. 87°19'36.44"E)
ADITIONALLY KNOWN AS KESTARAYA, THIS SOUTH-FACING TEMPLE IS FAMOUS FOR ITS STRUCTURAL FEATURES AND EXQUISITE TERRACOTTA EMBELLISHMENTS.
ORDING TO INSCRIPTION, THE TEMPLE WAS BUILT BY RAGHUNATH SIMHA IN 1655 CE. IT IS A COMPOSITION OF TWO LARGE DOCHALAS JOINED LONGITUDINALLY;
IALL CHARCHALA, A BRICK REPLICA OF A FOUR-SIDED ROOFED HUT, MARKS ITS JUNCTION. ITS OUTER DOCHALA SERVES AS THE PORCH AND THE INNER DOCHALA
HE SANCTUM. IN THE SANCTUM A STUCCO FIGURE OF SIX-ARMED SHRI CHAITNAYA DEVA IS PLACED ON A HIGH PEDESTAL AGAINST THE BACK WALL. THE TERRA-
TA DECORATION INCLUDES SCENES FROM THE MAHABHARATA, RAMAYANA AND KRISHNALILA. ON WALLS EAST AND WEST, TIMBER FRAME ON WHICH DOCHALAS
T HAS BEEN EFFICIENTLY TRANSLATED INTO TERRACOTTA TOO.


GPS Map Camera
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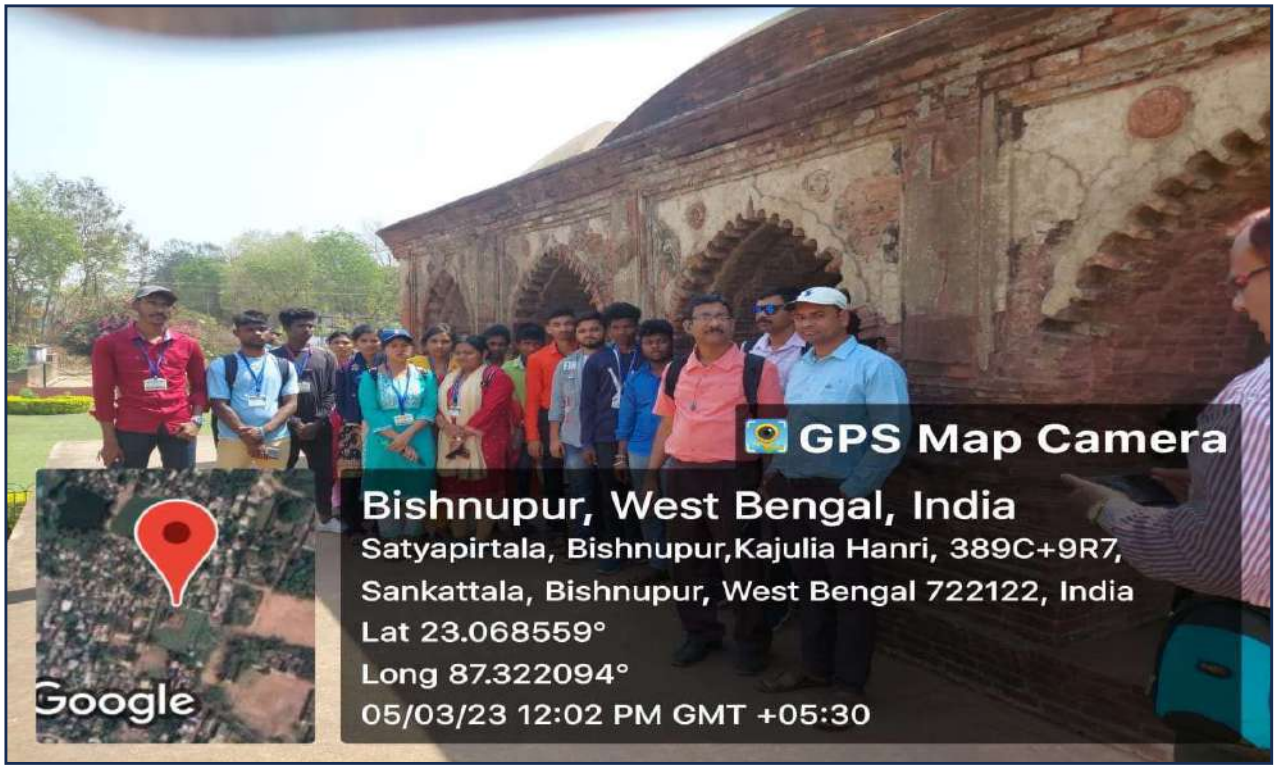
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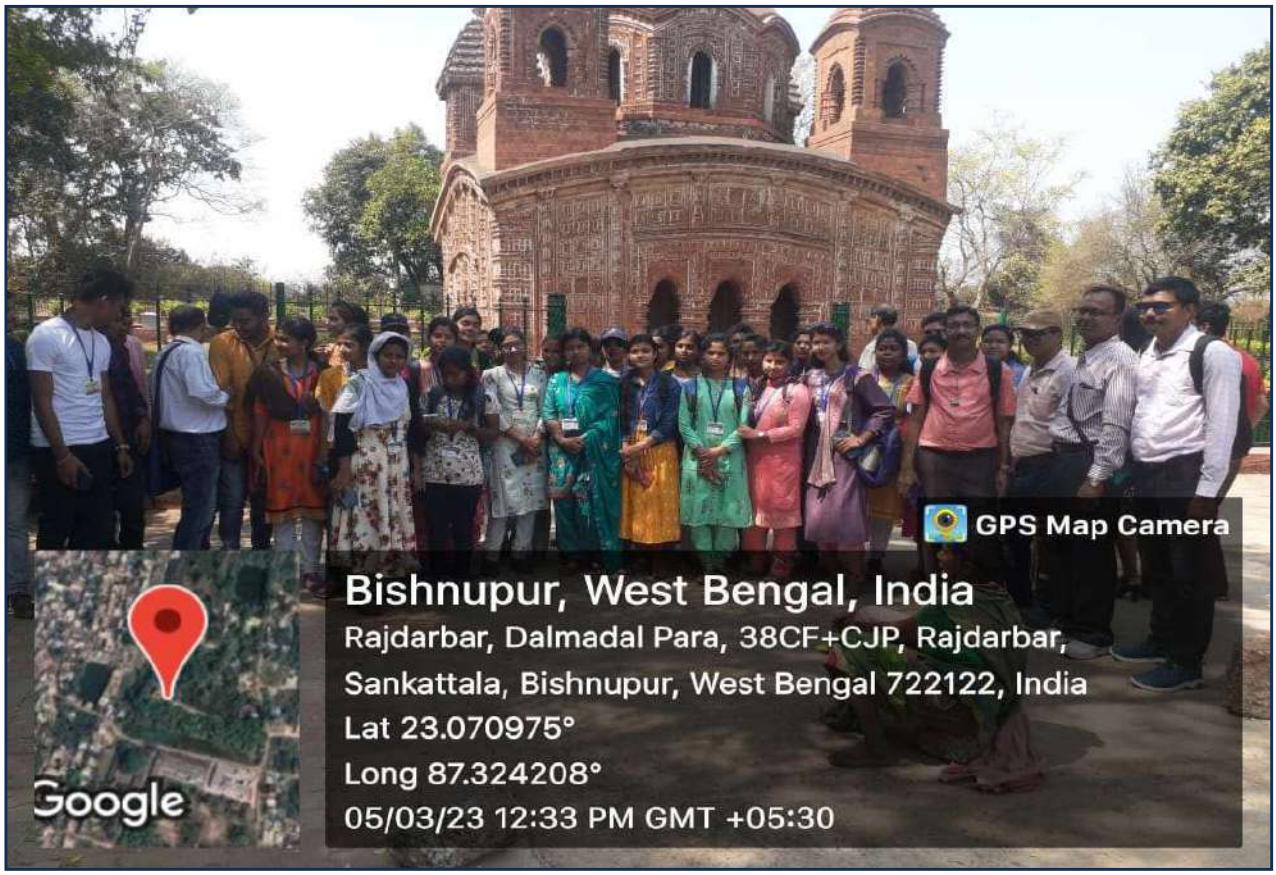
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Long 87.324208°
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Google


GPS Map Camera
Bishnupur, West Bengal, India
389C+9R7, Sankattala, Bishnupur, West Bengal 722122, India
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Long 87.321879°
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KHATRA ADIBASI MAHAVIDYALAYA
GPS Map Camera
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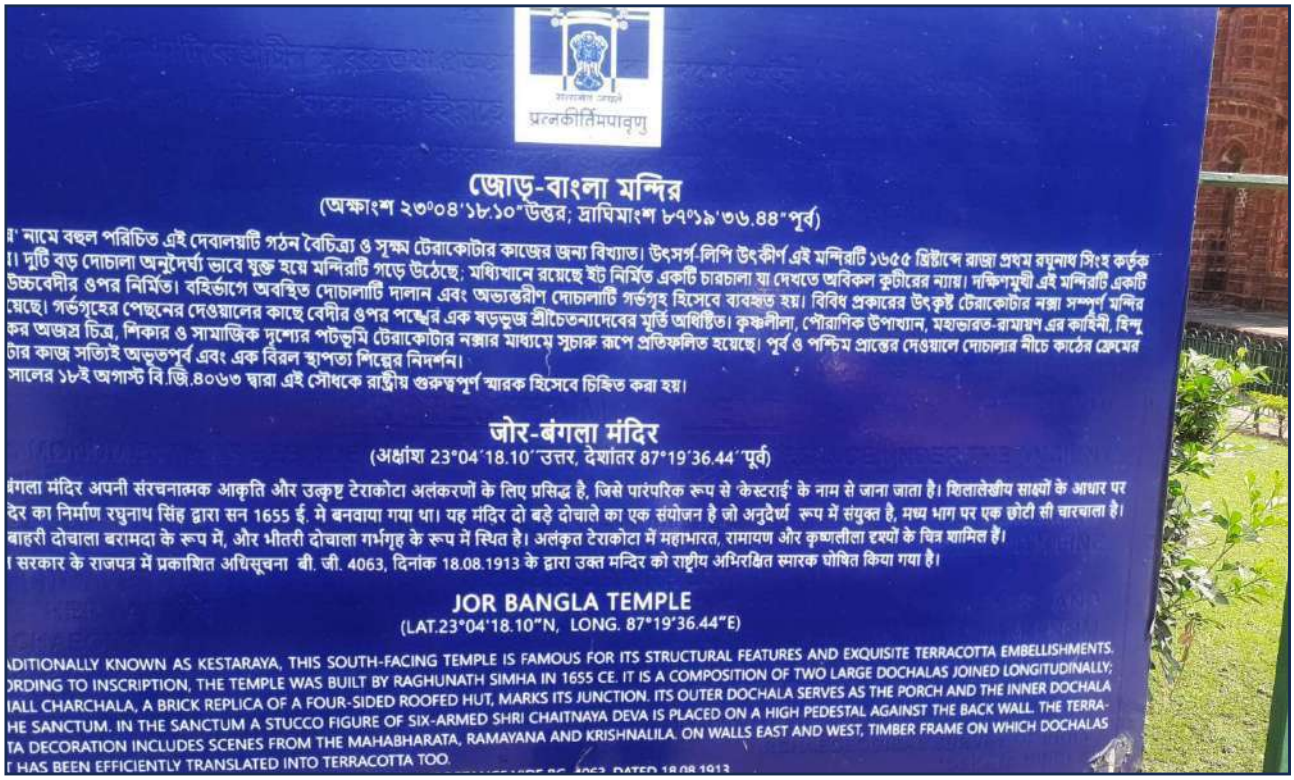
प्रत्नकीर्तिमपावृणु
জোড়-বাংলা মন্দির
(অক্ষাংশ ২৩°০৪'১৮.১০"উত্তর; দ্রাঘিমাংশ ৮৭°১৯'৩৬.৪৪"পূর্ব)
নামে বহুল পরিচিত এই দেবালয়টি গঠন বৈচিত্র্য ও সূক্ষ্ম টেরাকোটার কাজের জন্য বিখ্যাত। উৎসর্গ-লিপি উৎকীর্ণ এই মন্দিরটি ১৬৫৫ খ্রিষ্টাব্দে রাজা প্রথম রঘুনাথ সিংহ কর্তৃক
। দুটি বড় দোচালা অনুদৈর্ঘ্য ভাবে যুক্ত হয়ে মন্দিরটি গড়ে উঠেছে; মধ্যিখানে রয়েছে ইট নির্মিত একটি চারচালা যা দেখতে অবিকল কুটীরের ন্যায়। দক্ষিণমুখী এই মন্দিরটি একটি
উচ্চবেদীর ওপর নির্মিত। বহির্ভাগে অবস্থিত দোচালাটি দালান এবং অভ্যন্তরীণ দোচালাটি গর্ভগৃহ হিসেবে ব্যবহৃত হয়। বিবিধ প্রকারের উৎকৃষ্ট টেরাকোটার নক্সা সম্পূর্ণ মন্দির
য়েছে। গর্ভগৃহের পেছনের দেওয়ালের কাছে বেদীর ওপর পঞ্চের এক ষড়ভুজ শ্রীচৈতন্যদেবের মূর্তি অধিষ্ঠিত। কৃষ্ণলীলা, পৌরাণিক উপাখ্যান, মহাভারত-রামায়ণ এর কাহিনী, হিন্দু
কর অজস্র চিত্র, শিকার ও সামাজিক দৃশ্যের পটভূমি টেরাকোটার নক্সার মাধ্যমে সুচারু রূপে প্রতিফলিত হয়েছে। পূর্ব ও পশ্চিম প্রান্তের দেওয়ালে দোচালার নীচে কাঠের ফ্রেমের
টার কাজ সত্যিই অভূতপূর্ব এবং এক বিরল স্থাপত্য শিল্পের নিদর্শন।
সালের ১৮ই অগাস্ট বি.জি.৪০৬৩ দ্বারা এই সৌধকে রাষ্ট্রীয় গুরুত্বপূর্ণ স্মারক হিসেবে চিহ্নিত করা হয়।
JOR BANGLA TEMPLE
(LAT.23°04'18.10"N, LONG. 87°19'36.44"E)
ADITIONALLY KNOWN AS KESTARAYA, THIS SOUTH-FACING TEMPLE IS FAMOUS FOR ITS STRUCTURAL FEATURES AND EXQUISITE TERRACOTTA EMBELLISHMENTS.
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HE SANCTUM. IN THE SANCTUM A STUCCO FIGURE OF SIX-ARMED SHRI CHAITNAYA DEVA IS PLACED ON A HIGH PEDESTAL AGAINST THE BACK WALL. THE TERRA-
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जोर-बंगला मंदिर
(अक्षांश 23°04'18.10"उत्तर, देशांतर 87°19'36.44"पूर्व)
बंगला मंदिर अपनी संरचनात्मक आकृति और उत्कृष्ट टेराकोटा अलंकरणों के लिए प्रसिद्ध है, जिसे पारंपरिक रूप से 'केस्टराई' के नाम से जाना जाता है। शिलालेखीय साक्ष्यों के आधार पर
दिर का निर्माण रघुनाथ सिंह द्वारा सन 1655 ई. मे बनवाया गया था। यह मंदिर दो बड़े दोचाले का एक संयोजन है जो अनुदैर्ध्य रूप में संयुक्त है, मध्य भाग पर एक छोटी सी चारचाला है।
बाहरी दोचाला बरामदा के रूप में, और भीतरी दोचाला गर्भगृह के रूप में स्थित है। अलंकृत टेराकोटा में महाभारत, रामायण और कृष्णलीला दृश्यों के चित्र शामिल हैं।
। सरकार के राजपत्र में प्रकाशित अधिसूचना बी. जी. 4063, दिनांक 18.08.1913 के द्वारा उक्त मन्दिर को राष्ट्रीय अभिरक्षित स्मारक घोषित किया गया है।


KHATRA ADIBASI MAHAVIDYALAYA
DEPARTMENT OF HISTORY
EDUCATIONAL TOUR
GPS Map Camera
Bishnupur, West Bengal, India
388G+G34, Bishnupur College Rd, Dalmadal Para, Bishnupur,
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Lat 23.06644°
Long 87.325207°
05/03/23 01:48 PM GMT +05:30
Google


GPS Map Camera
Bishnupur, West Bengal, India
387C+79W, Dalmadal Para, Bishnupur, West Bengal
722122, India
Lat 23.063182°
Long 87.320813°
05/03/23 03:53 PM GMT +05:30
Google

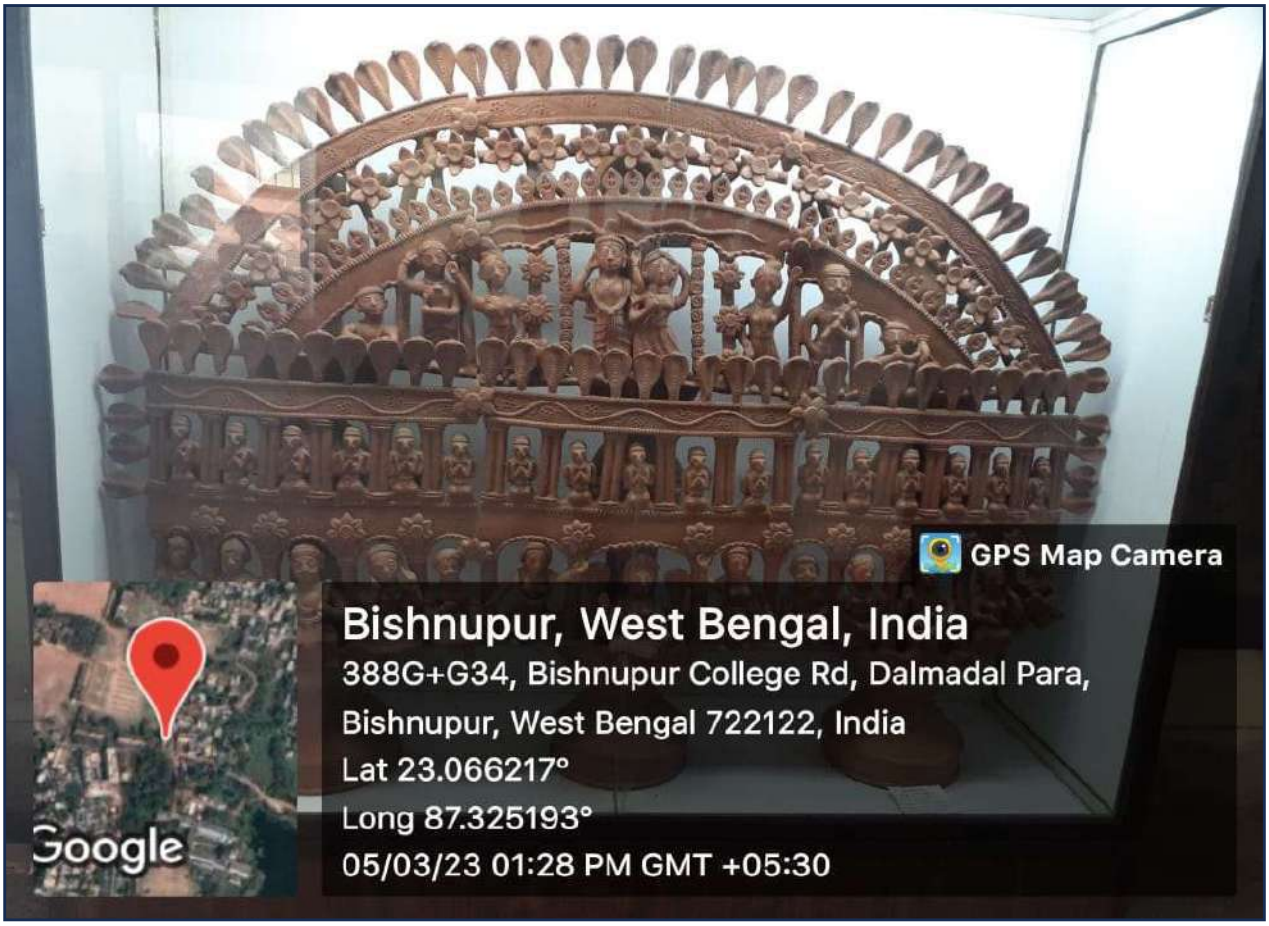

GPS Map Camera
Bishnupur, West Bengal, India
386C+3P4, Dalmadal Para, Bishnupur, West Bengal
722122, India
Lat 23.06016°
Long 87.321712°
05/03/23 04:32 PM GMT +05:30
Google


GPS Map Camera
Bishnupur, West Bengal, India
389C+7MV, Rasmancha Rd, Sankattala, Bishnupur, West Bengal 722122, India
Lat 23.068236°
Long 87.321891°
05/03/23 12:08 PM GMT +05:30
Google


GPS Map Camera
Bishnupur, West Bengal, India
388G+G34, Bishnupur College Rd, Dalmadal Para, Bishnupur, West Bengal 722122, India
Lat 23.066244°
Long 87.325072°
05/03/23 01:29 PM GMT +05:30
Google


GPS Map Camera
Bishnupur, West Bengal, India
388F+9RR, Bishnupur College Rd, Dalmadal Para,
Bishnupur, West Bengal 722122, India
Lat 23.065998°
Long 87.324726°
05/03/23 01:31 PM GMT +05:30
Google


GPS Map Camera
Bishnupur, West Bengal, India
388G+G34, Bishnupur College Rd, Dalmadal Para,
Bishnupur, West Bengal 722122, India
Lat 23.066257°
Long 87.325119°
05/03/23 01:29 PM GMT +05:30
Google



LIST OF PARTICIPANTS:

Sem & Rollno	U-Roll no.	Student Name	Phone No	Student ID
IV-154	21111104025	ANINDITA KARMAKAR	6294753704	1112101854
IV-157	21111104029	MAMPI KARMAKAR	7679593011	1112100704
IV-158	21111104006	PIU KARMAKAR	9547592206	1112102379
IV-164	21111104024	PUJA GARAI	7866070028	1112102964
IV-169	21111104032	BARNALI SING	9002709128	1112104001
IV-175	21111104042	MITU MANDAL	7583933581	1112101006
IV-177	21111104008	RADHA KARMAKAR	7857092556	1112104421
IV-180	21111104028	PAMPA KARMAKAR	9083524435	1112101734
IV-182	21111104048	SHAMPA KARMAKAR	7584919102	1112101864
IV-188	21111104030	RUMA GORAI	7029023770	1112101489
IV-191	21111104050	DEBSHIKA MAHATA	9883375619	1112104281
IV-199	21111104020	SARAMA SAHU	8016176071	1112101223
IV-201	21111104039	ANIMA SARDAR	7865903578	1112102673
IV-211	21111104031	PUJA CHAND	9635447091	1112101456
IV-1539	21111104017	SUDESHNA SINGHA	8515988173	1112100565

Sem & Rollno	U-Roll no.	Student Name	Phone No
VI-178	19111104027	TRIPTI PATRA	9564090930
VI-194	20111104002	KRISHNA MAHAPATRA	9800915352
VI-178	19111104027	TRIPTI PATRA	9564090930
VI-164	19111104017	DISHA GANGULY	7319126857
VI-206	20111104015	TANUSHREE BAURI	8016488543
IV-		SANGHA MITRA KARMAKAR	
IV-180	20111104042	MITA MANDAL	6294830544
IV-157	21111104029	MAMPI KARMAKAR	7679593011
IV-211	21111104031	PUJA CHAND	9635447091
II-204	22111104019	SONALI KARMAKAR	8710075748
II-181	22111104020	PRIYANKA KARMAKAR	8617532460
II-203	22111104031	SOMA BIT	7908429416
II-158	22111104035	BEAUTI GOPE MANDAL	9732282196
II-190	22111104014	RINKU MAHATA	6295184762
II-1402	22111104010	SEFALI MANDAL	7063421852

VI-178	20111104045	ANWESHA KARAK	9883353771
VI-147	20111104004	SAMPA BAURI	9933168136
VI-150	20111104054	MITHU PATRA	9883270625
VI-144	20111104046	PRIYA PATRA	9635353723
VI-168	20111104053	MINAKSHMI PANDA	8116835564
VI-153	20111104021	LAKSHMI MAHATA	8159840907
188	20111104020	LAXMI MANDAL	8116281608
IV-158	21111104006	PIU KARMAKAR	9547592206
IV177	21111104008	RADHA KARMAKAR	7857092556
IV-158	21111104028	PAMPA KARMAKAR	9083524435
II-220	22111104024	TANUSHREE KARMAKAR	8167706838
II-157	22111104043	BARSHA SINGHAMAHAPATRA	7601904528
II-189	22111104055	RINA DULEY	8972198113
II-170	22111104041	KOYEL MANDAL	9883343836
		SANCHITA MAHATA	

VI-148	20111104010	KAILASH BAURI	7364028065
IV-164	22111104054	JISHU KARMAKAR	
IV-166	22111104038	JIT BARAT	9641177485
VI-758	22111204041	NITAI MAHATA	8327091505
197	22111104008	SARASWATI MAHATA	7872456522
218	22111104048	SUSMITA MAHATA	8710023208
VI-1320	20111203008	PARUL MURMU	9339293965
II-970	1112203388	NILIMA TUDU	9083378982
VI-444	20111204046	SIDDHISWAR MURMU	7583989506
IV		MALLIKA MAHATA	
IV-217	9749371989	PAMPA KARMAKAR	9749371989

VI-148	20111104010	KAILASH BAUR	7364028065
IV-164	22111104054	JISHU KARMAKAR	
IV-166	22111104038	JIT BARAT	9641177485
VI-758	22111204041	NITAI MAHATA	8327091505
197	22111104008	SARASWATI MAHATA	7872456522
218	22111104048	SUSMITA MAHATA	8710023208
VI-1320	20111203008	PARUL MURMU	9339293965
II-970	1112203388	NILIMA TUDU	9083378982
VI-444	20111204046	SIDDHISWAR MURMU	7583989506
IV		MALLIKA MAHATA	
IV-217	9749371989	PAMPA KARMAKAR	9749371989

Alok Bhowmik
19-12-23
Head
Department of History
Khatra Adibasi Mahavidyalaya

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Certificate of Project Completion: 06.03.2023

This is to certify that the following students (list attached), a group of students from **Semesters IV and VI**, have successfully completed the workshop/project titled "Educational Tour Report: Exploring Temple Architecture of Bishnupur and a Visit to Acharya Jogesh Chandra Purakriti Bhaban (District Museum) Bishnupur, Bankura, West Bengal" under the guidance of Dr. Aloke Bhowmik, Assistant Professor of History, on March 5, 2023.

This project work/fieldwork (study tour) has been evaluated and found to meet the requirements and standards set by the Department of History.

We commend these students for their hard work, dedication, and commitment to excellence.

Principal's Signature: 06.03.2023

Signature of the Principal with date

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

HOD's Signature: 06.03.2023

Head
Department of History
Khatra Adibasi Mahavidyalaya

Supervisor's Signature: 06.03.2023

Head
Department of History
Khatra Adibasi Mahavidyalaya

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Date: 19.05.2023

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct Project Work/Field Work

Respected Sir/Madam,

I am writing to seek your kind permission to conduct a project work/field work - TWO-DAY WORKSHOP ON HANDICRAFTS MAKING (CLAY DOLL MAKING AND CLAY POTTERY MAKING) 29TH & 30TH MAY, 2023 as part of the following Semester and Course –

IV SEM HONS-UG/HIST/405 SEC-2: Understanding Popular Culture VI SEM HONS

UG/HIST/602 C-14: History of South-West Bengal (1740-1947) VI SEM PROGRAMMEE

APHST/601DSE- 1B/History of South-West Bengal (1740-1947)

The proposed project/field work involves--**Introduction**

This workshop will provide students with crucial hands-on experience to complement their theoretical knowledge, fostering cultural awareness and empowering them with valuable skills.

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Date: 19.05.2023

Day 1

Students will explore the art of bamboo and clay crafts. A local bamboo artisan will showcase the creation of various items, emphasizing the significance of bamboo in rural livelihoods and the potential for income generation. Participants will also engage in clay pottery making, guided by experts.

Day 2

The second day will delve into the art of Bel Mala (wood apple shell garland) creation, allowing students to learn about its history, cultural relevance, and economic potential. Simultaneously, workshops on clay doll making and Tabla (musical instrument) making will be held, highlighting the diversity of traditional crafts. The day will conclude with a pottery session, showcasing the historical importance of the potter's wheel and the practical applications of earthenware.

Objectives

- Provide hands-on experience in traditional crafts to complement theoretical knowledge.
- Promote cultural awareness and appreciation for local heritage.
- Empower students with skills that can be used for income generation and cultural preservation.
- Foster creativity and encourage the continuation of traditional art forms.

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Date: 19.05.2023

Expected Outcomes

- Students will gain practical skills in various traditional crafts.
- Cultural awareness and appreciation for local heritage will be enhanced.
- Students will be empowered with skills for potential income generation.
- Creativity and interest in traditional art forms will be fostered.

ConclusionThis Two-Day Handicrafts Workshop at Khatra Adibasi Mahavidyalaya promises to be a valuable experience for students, enriching their education and contributing to the preservation of cultural heritage. The Department of History is committed to organizing initiatives that benefit the community and promote the holistic development of students.

I intend to carry out this work between 29.05.2023and 30.05.2023 for the students. The specific locations/sites involved in this study is Khatra Adibasi Mahavidyalaya Campus

I assure you that I will adhere to all the guidelines and regulations of the college during this project/field work. I will also ensure that this work will not disrupt the regular activities of the college or the locations/sites involved.

I kindly request you to grant me the necessary permission to undertake this project/field work. I am confident that this experience will significantly contribute to the academic and professional growth of the students.

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

Date: 19.05.2023

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Head
Department of History
Khatra Adibasi Mahavidyalaya

Dr. Aloke Bhowmik
Assistant Professor and Head of the Department

Department of History
Email: hist.aloke@kamv.ac.in

18.05.2023

NOTE: The proposal is approved. The department is requested to proceed with organizing the workshop. The Head of Department (HOD) is requested to coordinate with the Internal QualityAssurance Cell (IQAC) of the college and to engage students and teachers from the colleges under the Memorandum of Understanding (MOU) with Khatra Adibasi Mahavidyalaya.

Signature of the Principal with date

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

Principal's Signature: 19.05.2023

KHATRA ADIBASI MAHAVIDYALAYA, DEPARTMENT OF HISTORY TWO DAY WORKSHOP ON HANDICRAFTS MAKING, DATE 29TH AND 30TH MAY 2023

LIST OF PARTICIPANTS:

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (CLAY DOLL MAKING AND CLAY POTTARY MAKING)

29TH & 30TH MAY, 2023

	SEM AND ROLL NO	UID NO	NAME	MOBILE NO.
1	VI-161	20111104033	SOMA DEY	7865822489
2	VI-167	20111104035	SANGITA DEY	9883984716
3	VI-187	20111104041	LAKSHMIPRIYA MAHATA	8016997580
4	VI-193	20111104047	MOUSUMI MAHATA	9883546685
5	VI-199	20111104029	SWATI GHOSH	8207022012
6	IV-191	21111104050	DEBSHIKA MAHATA	9883375619
7	IV-154	21111104025	ANINDITA KARMAKAR	6294753704
8	IV-169	21111104032	BARNALI SING	9002709128
9	IV-154	21111104025	ANINDITA KARMAKAR	6294753704
10	II-154	22111104042	ARPITA MANDAL	8653400317
11	II-152	22111104044	ANNESHWA BANERJEE	7602461063
12	II-192	22111104030	SABITA PAIN	8649827013
13	II-182	22111104036	PRIYANKA MAJI	7319348435
14	II-162	22111104007	DIPALI DUTTA	8101009023
15	II-202	22111104023	SHREYA GHOSHAL	7810818735

Barrackpore Rastraguru Surendranath Colleg, 6, Riverside Road & 85, Middle Road,Pin: 700 120, West Bengal, Indaia

	6th sem			
16	VI-		SOUMYAK BAIN	
17	VI-		ANANDA PRASAD	

Aloke Bhowmik

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (BAMBOO CRAFTS MAKING AND CLAY POTTARY MAKING)) 29TH & 30TH MAY, 2023				
1	VI-148	20111104010	KAILASH BAURI	7364028065
2	IV-164	22111104054	JISHU KARMAKAR	
3	IV-166	22111104038	JIT BARAT	9641177485
4	VI-758	22111204041	NITAI MAHATA	8327091505
5	197	22111104008	SARASWATI MAHATA	7872456522
6	218	22111104048	SUSMITA MAHATA	8710023208
7	VI-1320	20111203008	PARUL MURMU	9339293965
8	II-970	1112203388	NILIMA TUDU	9083378982
9	VI-444	20111204046	SIDDHISWAR MURMU	7583989506
10	IV		MALLIKA MAHATA	
11	IV-217	9749371989	PAMPA KARMAKAR	9749371989
Barrackpore Rastraguru Surendranath College, 6, Riverside Road & 85, Middle Road, Pin: 700 120, West Bengal, India				
12		IV-	SAHIL PAL	
13		IV-	BISWAJIT SINGH	

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (CLAY DOLL MAKING AND CLAY POTTARY MAKING)

29TH & 30TH MAY, 2023

Aloke Bhowmik

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (BEL MALA MAKING)

29TH & 30TH MAY, 2023

1	VI-178	20111104045	ANWESHA KARAK	9883353771
2	VI-147	20111104004	SAMPA BAURI	9933168136
3	VI-150	20111104054	MITHU PATRA	9883270625
4	VI-144	20111104046	PRIYA PATRA	9635353723
5	VI-168	20111104053	MINAKSHMI PANDA	8116835564
6	VI-153	20111104021	LAKSHMI MAHATA	8159840907
7	188	20111104020	LAXMI MANDAL	8116281608
8	IV-158	21111104006	PIU KARMAKAR	9547592206
9	IV177	21111104008	RADHA KARMAKAR	7857092556
10	IV-158	21111104028	PAMPA KARMAKAR	9083524435
11	II-220	22111104024	TANUSHREE KARMAKAR	8167706838
12	II-157	22111104043	BARSHA SINGHAMAHAPATRA	7601904528
13	II-189	22111104055	RINA DULEY	8972198113
14	II-170	22111104041	KOYEL MANDAL	9883343836
15			SANCHITA MAHATA	

Barrackpore Rastraguru Surendranath College, 6, Riverside Road & 85, Middle Road, Pin: 700 120, West Bengal, India

16	IV		B.SUMIT RAO	
17	IV		AKASH KUMAR RAM	

Aloke Bhowmik

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (TABLA MAKING AND CLAY POTTARY MAKING)

29TH & 30TH MAY, 2023

1	VI-178	19111104027	TRIPTI PATRA	9564090930
2	VI-194	20111104002	KRISHNA MAHAPATRA	9800915352
3	VI-178	19111104027	TRIPTI PATRA	9564090930
4	VI-164	19111104017	DISHA GANGULY	7319126857
5	VI-206	20111104015	TANUSHREE BAURI	8016488543
6	IV-		SANGHA MITRA KARMAKAR	
7	IV-180	20111104042	MITA MANDAL	6294830544
8	IV-157	21111104029	MAMPI KARMAKAR	7679593011
9	IV-211	21111104031	PUJA CHAND	9635447091
10	II-204	22111104019	SONALI KARMAKAR	8710075748
11	II-181	22111104020	PRIYANKA KARMAKAR	8617532460
12	II-203	22111104031	SOMA BIT	7908429416
13	II-158	22111104035	BEAUTI GOPE MANDAL	9732282196
14	II-190	22111104014	RINKU MAHATA	6295184762
15	II-1402	22111104010	SEFALI MANDAL	7063421852
16	VI		PRITTAM SWANAKATR	
17	VI		AKASH HALDAR	

Aloke Bhowmik

Head
Department of History
Khatra Adibasi Mahavidyalaya

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF HISTORY

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING

Under MoU Initiative

DATE: 29th & 30th May 2023

VENUE: KHATRA ADIBASI MAHAVIDYALAYA

KHATRA ADIBASI MAHAVIDYALAYA

P.O.: Khatra, Dist. Bankura, West Bengal, Pin: 722140
Phone: 8900057220 E-mail:*kamrusa2@gmail.com/ kacollege@rediffmail.com*
Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Ref. No.: KAM/HIST/ WS-01/22-23 Date: 24.05.2023

To

The Principal,

Barrackpore Rashtraguru Surendranath college,

6, Riverside Road and 85 Middle Road Barrackpore

Kolkata 7000120

From: The Principal

Khatra Adibasi Mahavidyalaya,

Khatra, Bankura, 722140

Sub: Intimation and request for sending students in a workshop on handicrafts making organized by the department of History of our college.

Sir,

It is my pleasure to inform you that the department of History of our college is going to organize a workshop on handicrafts making. Local artisans will teach the students to prepare various artifacts. It is a two days programme, scheduled to be held on 29th May and 30th May,2023 in our college campus. You may send maximum number of 6 (six) students (both boys and girls) under the supervision of a teacher. Accommodation will be provided by the college. Registration fees is Rs.200/- for each student.

For details you may contact to the following teachers- 1. Dr. Aloke Bhowmik, HOD, Department of History, (Mobile no.-8910120338, mail id. – hist.aloke@kamv.ac.in)

2. Shri Shyamsundar Dutta,Workshop coordinator, Department of History (Mobile no. 9434362193, mail id. shyamsundarkam@gmail.com)

With Thanks

Dr.Nityananda Patra

Principal
Khatra Adibasi Mahavidyalaya
Khatra :: Bankura

KHATRA ADIBASI MAHAVIDYALAYA

P.O.: Khatra, Dist. Bankura, West Bengal, Pin: 722140
Phone: 8900057220 E-mail:*kamrusa2@gmail.com/ kacollege@rediffmail.com*
Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Ref. No.: KAM/HIST/ WS-01/22-23 Date: 24.05.2023

The Principal,

Pandit Raghunath Murmu Smriti Mahavidyalaya,

Baragari(P.More),P.O-Jamboni, Dist. Bankura, PIN-722150

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Bankura

From: The Principal

Khatra Adibasi Mahavidyalaya,

Khatra, Bankura, 722140

Sub: Intimation and request for sending students in a workshop on handicrafts making organized by the department of History of our college.

Sir,

It is my pleasure to inform you that the department of History of our college is going to organize a workshop on handicrafts making. Local artisans will teach the students to prepare various artifacts. It is a two days programme, scheduled to be held on 29th May and 30th May,2023 in our college campus. You may send maximum number of 6 (six) students (both boys and girls) under the supervision of a teacher. Accommodation will be provided by the college. Registration fees is Rs.200/- for each student.

For details you may contact to the following teachers-

1. Dr. Aloke Bhowmik, HOD, Department of History, (Mobile no.-8910120338, mail id. – hist.aloke@kamv.ac.in)

2. Shri Shyamsundar Dutta,Workshop Coordinator, Department of History (Mobile no. 9434362193, mail id. - shyamsundar.kam@gmail.com)

With Thanks

Dr.NityanandaPatra
Principal
Khatra Adibasi Mahavidyalaya
Khatra :: Bankura

KHATRA ADIBASI MAHAVIDYALAYA

P.O.: Khatra, Dist. Bankura, West Bengal, Pin: 722140
Phone: 8900057220 E-mail:*kamrusa2@gmail.com/ kacollege@rediffmail.com*
Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Ref. No.: KAM/HIST/ WS-01/22-23 Date: 24.05.2023

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Bankura

To

The Principal,

Saltora Netaji Centenary College

Saltora,Bankura-722158

From: The Principal

Khatra Adibasi Mahavidyalaya,

Khatra, Bankura- 722140

Sub: Intimation and request for sending students in a workshop on handicrafts making organized by the department of History of our college.

Sir,

It is my pleasure to inform you that the department of History of our college is going to organize a workshop on handicrafts making. Local artisans will teach the students to prepare various artifacts. It is a two days programme, scheduled to be held on 29th May and 30th May,2023 in our college campus. You may send maximum number of 6 (six) students (both boys and girls) under the supervision of a teacher. Accommodation will be provided by the college. Registration fees is Rs.200/- for each student.

For details you may contact to the following teachers- 1. Dr. Aloke Bhowmik, HOD, Department of History, (Mobile no.-8910120338, mail id. – hist.aloke@kamv.ac.in)

2. Shri Shyamsundar Dutta,Workshop coordinator, Department of History (Mobile no. 9434362193, mail id.-shyamsundar.kam@gmail.com)

With Thanks

Dr.Nityananda Patra

Principal
Khatra Adibasi Mahavidyalaya
Khatra :: Bankura

Workshop Report: Two Days Handicrafts Making Workshop

at
Khatra Adibasi Mahavidyalaya

Organized by: Department of History in collaboration with Surendranath College, Barackpore

Target Group: 4th and 6th Semester Students

Syllabus-

IV SEM HONS-UG/HIST/405 SEC-2: Understanding Popular Culture

VI SEM HONS-UG/HIST/602 C-14: History of South-West Bengal (1740-1947)

VI SEM PROGRAMMEE-APHST/601DSE- 1B/History of South-West Bengal (1740-1947)

Invited Institution: Rastraguru Surendranath College

Date: 29th & 30th May 2023

Venue: Khatra Adibasi Mahavidyalaya, Khatra Bankura

Total Participants- From: Khatra Adibasi Mahavidyalaya: 60

Rastraguru Surendranath College: 6

Pandit Raghunath Murmu Smriti Mahavidyalaya: None participated due to academic engagement, yet resources shared virtually

Saltora Netaji Centenary College: None participated due to academic engagement, yet resources shared virtually

The Department of History at Khatra Adibasi Mahavidyalaya successfully hosted a comprehensive Two Days Handicrafts Making Workshop on the 29th and 30th of May 2023. This initiative, tailored for 4th and 6th-semester students, aimed to promote traditional art forms and provide a creative platform for the expression of creativity. The workshop welcomed students from diverse backgrounds and extended invitations to Rastraguru Surendranath College, (College under MoU with Khatra Adibasi Mahavidyalaya) enriching the experience with varied perspectives.

Day 1st and 2nd : Bamboo Crafts Making and Clay Pottery Making

Bamboo is a natural plant abundantly found in various regions of rural West Bengal. It serves as a valuable resource for crafting diverse handicrafts and household items across different parts of our country and state. Bamboo holds a significant role in sustaining numerous livelihoods and is integral to life in these regions.

To enlighten students on this matter, a proficient bamboo artisan was invited to demonstrate the craft of creating various items using bamboo. The objective was to impart the skills to students, enabling them to independently engage in this craft, create diverse items, and potentially generate income. Furthermore, the workshop aimed to offer a comprehensive understanding of bamboo craftsmanship and its pivotal role in the rural lifestyle and economy.

The inaugural day of the workshop featured engaging sessions on Bamboo Crafts Making and Clay Pottery Making. Enthusiastic participants, including students from the 4th and 6th semesters and invited guests from Rastraguru Surendranath College, eagerly gathered at the venue. Renowned experts in the field guided attendees through the intricate process of crafting items using bamboo and clay. The hands-on experience allowed participants to delve into the art forms, gaining a profound appreciation for the cultural significance of these traditional crafts.

Day 1st and 2nd : Bel Mala Making and Clay Doll Making

Title: Report on Belmala (Wood Apple Shell Garland) Making Workshop

Objective:

The primary objective of the Belmala making (Wood Apple Shell Garland) workshop was to introduce students to the art of crafting garlands from wood apple shells, commonly known as Belmala. Emphasis was placed on the historical significance of this traditional craft and the potential for sustaining local livelihoods through the creation of unique and culturally rich artifacts.

Workshop Details:

Conducted by a proficient artisan specializing in Belmala making from our locality, the workshop commenced with an informative presentation by departmental teachers. The presentation delved into the historical evolution of Belmala and its cultural relevance, offering students valuable insights into the traditions associated with this craft.

The artisan shared in-depth knowledge about the techniques, tools, and methods involved in crafting Belmala. The session provided a platform for students to understand the cultural importance of Belmala and its role in various rituals and festive occasions.

Practical Session:

The highlight of the workshop was the hands-on experience during the practical session. Students were actively engaged in creating their own Belmalas under the guidance of the skilled artisan. Essential techniques such as stringing, weaving, and decorating were demonstrated, allowing students to experience the intricate process of Belmala making.

Educational Significance:

Similar to the clay doll making workshop, the Belmala making session not only equipped students with practical skills but also deepened their appreciation for the cultural and economic aspects of this traditional craft. Students gained insights into the diverse applications of Belmala, ranging from religious rituals to decorative elements in cultural celebrations.

Conclusion:

The Belmala making workshop proved to be an enriching experience for students, broadening their exposure to indigenous crafts and cultural traditions. The success of such initiatives underscores the importance of integrating traditional crafts into educational programs, fostering a stronger connection between cultural heritage, craftsmanship, and sustainable livelihoods. As we reflect on the positive outcomes of this workshop, it encourages the continuation of similar endeavors to preserve and promote our rich cultural heritage.

CLAY DOLL MAKING-

A recent workshop on clay doll making served as an extension of the broader exploration into pottery and earthenware. The workshop, an initiative aimed at expanding students' knowledge and skills, focused on the art of crafting clay dolls, providing them with insights into this traditional craft.

Objective:

The primary objective of the workshop was to introduce students to the intricate world of clay doll making, emphasizing its historical significance and the potential for sustaining livelihoods through this traditional craft. The session was designed to offer hands-on experience under the guidance of a skilled local potter, fostering an understanding of the creative process and the cultural importance of clay dolls.

Workshop Details:

Conducted by a proficient clay artisan from our locality, the workshop began with an informative presentation on the historical evolution of clay dolls and their cultural relevance by the departmental

teachers. The potter shared insights into various techniques, tools, and methods employed in crafting clay dolls.

Practical Session:

The highlight of the workshop was the practical session where students were given the opportunity to create their own clay dolls. The artisan demonstrated essential techniques, including molding, shaping, and detailing, allowing students to actively engage in the creative process. This hands-on experience aimed to instill a sense of appreciation for the craftsmanship involved in clay doll making.

Educational Significance:

The workshop not only provided students with practical skills but also enhanced their understanding of the economic prospects associated with clay doll making. By learning about the intricacies of this traditional craft, students gained insights into the cultural heritage preserved through such art forms and the potential for sustaining local livelihoods.

Conclusion:

The clay doll making workshop proved to be a valuable addition to the students' exposure to traditional crafts. It not only offered them a practical skillset but also deepened their appreciation for the cultural and economic significance of clay doll making. The success of this workshop encourages the continuation of similar initiatives, fostering a connection between traditional crafts, cultural heritage, and sustainable livelihoods.

The focus shifted on the second day to Bel Mala Making and Clay Doll Making. Workshops were designed to introduce participants to the art of creating decorative garlands (Bel Mala) and intricate clay dolls. Skilled artisans shared their expertise, techniques, and insights with attendees, providing valuable hands-on experience. This not only refined the participants' artistic skills but also deepened their understanding of the cultural heritage associated with these crafts.

Day 2nd Tabla Making and Clay Pottery Making Workshop

Simultaneously, a parallel workshop on Tabla Making and Clay Pottery Making added a rhythmic dimension to the event. This unique combination allowed participants to explore the world of tabla crafting alongside the traditional art of clay pottery. The fusion of these two workshops showcased the diverse range of artistic expressions and cultural traditions that the region has to offer.

Participants expressed their gratitude for the well-organized workshops, praising the expertise of the instructors and the inclusive learning environment. Certificates of participation were distributed, acknowledging the dedication and active involvement of the attendees.

Report on Table (Musical Instruments) Making Workshop

Objective:

The primary objective of the table making (Musical Instruments) workshop was to introduce students to the intricate world of crafting musical instruments, with a specific emphasis on tables. The workshop sought to underscore the historical significance of this traditional craft and its potential for sustaining local livelihoods through the creation of unique and culturally rich musical instruments.

Workshop Details:

Conducted by a proficient artisan specializing in table making from our locality, the workshop kicked off with an enlightening presentation delivered by departmental teachers and IQAC coordinator of our college Dr. Arindam Chakraborty. This presentation delved into the historical evolution of musical instruments specially drums and their cultural relevance, offering students valuable insights into the traditions associated with this craft.

The artisan shared in-depth knowledge about the techniques, tools, and methods involved in crafting Tabla. The session provided a platform for students to grasp the cultural importance of these Tabla and their role in various musical traditions.

Practical Session:

The highlight of the workshop was the hands-on experience during the practical session. Students actively participated in the process of crafting Tabla under the guidance of the skilled artisan. Essential techniques, such as carving, tuning, and decorating, were demonstrated, allowing students to gain a firsthand experience of the intricate process of Tabla making.

Educational Significance:

Similar to the other session, the table making session not only equipped students with practical skills but also deepened their appreciation for the cultural and economic aspects of this traditional craft. Students gained insights into the diverse applications of Tablas, understanding their role in various musical genres and cultural expressions.

Conclusion:

The Tabla making workshop proved to be an enriching experience for students, expanding their exposure to indigenous crafts and cultural traditions, specifically in the realm of musical instruments. The success of such initiatives reaffirms the importance of integrating traditional crafts, like musical tabla making, into educational programs, fostering a stronger connection between cultural heritage,

craftsmanship, and sustainable livelihoods. As we reflect on the positive outcomes of this workshop, it encourages the continuation of similar endeavors to preserve and promote our rich cultural heritage.

Earthenware items, especially household essentials like clay pots, pitchers, and clay cups, are widely used in various tasks and religious rituals in our country. The contemporary era has seen a broad resurgence in the use of clay products, with clay cups being particularly popular as tea mugs. The invention of the potter's wheel is a landmark event in the history of civilization.

This topic was presented to students, shedding light on the discovery of the potter's wheel and providing information about pottery as a craft. The workshop aimed to familiarize students with clay pottery and the livelihood opportunities it offers to skilled artisans. The Kumhar's wheel was introduced, emphasizing its significance in the history of civilization and its role in sustaining livelihoods.

The workshop, facilitated by a skilled potter, demonstrated how students can create various items using the potter's wheel. The objective was to inform students about the art of pottery, its dependence on skilled potters, and how a livelihood can be sustained through pottery. The workshop played a crucial role in introducing students to the basics of pottery and its relevance in their lives.

Earthenware items, particularly household essentials such as clay pots, pitchers, and clay cups are extensively utilized in various daily tasks and religious ceremonies in our country. There has been a notable resurgence in the use of clay products in contemporary times, with clay cups gaining particular popularity, especially as tea mugs. The invention of the potter's wheel stands as a pivotal event in the history of civilization.

This subject was presented to students, shedding light on the discovery of the potter's wheel and providing insights into pottery as a craft. The workshop aimed to acquaint students with clay pottery and the potential livelihood opportunities it offers to skilled artisans. The potter's wheel, commonly known as the Kumhar's wheel, was introduced, emphasizing its historical significance and its role in sustaining livelihoods.

Conducted by a proficient potter of our locality, the workshop demonstrated how students can create various items using the potter's wheel. The goal was to educate students about the art of pottery, its reliance on skilled artisans, and how a sustainable livelihood can be achieved through pottery. The workshop played a crucial role in introducing students to the fundamentals of pottery and highlighting its relevance in their lives.

The success of the Two-Day Handicrafts Making Workshop at Khatra Adibasi Mahavidyalaya highlights the importance of preserving and promoting traditional crafts. Such initiatives not only

contribute to the cultural enrichment of the community but also empower individuals with valuable skills that can be passed on to future generations. Khatra Adibasi Mahavidyalaya remains committed to fostering creativity, preserving cultural heritage, and providing a platform for the holistic development of its students.

LIST OF PARTICIPANTS:

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (CLAY DOLL MAKING AND CLAY POTTARY MAKING) 29TH & 30TH MAY, 2023				
	SEM AND ROLL NO	UID NO	NAME	MOBILE NO.
1	VI-161	20111104033	SOMA DEY	7865822489
2	VI-167	20111104035	SANGITA DEY	9883984716
3	VI-187	20111104041	LAKSHMIPRIYA MAHATA	8016997580
4	VI-193	20111104047	MOUSUMI MAHATA	9883546685
5	VI-199	20111104029	SWATI GHOSH	8207022012
6	IV-191	21111104050	DEBSHIKA MAHATA	9883375619
7	IV-154	21111104025	ANINDITA KARMAKAR	6294753704
8	IV-169	21111104032	BARNALI SING	9002709128
9	IV-154	21111104025	ANINDITA KARMAKAR	6294753704
10	II-154	22111104042	ARPITA MANDAL	8653400317
11	II-152	22111104044	ANNESHWA BANERJEE	7602461063
12	II-192	22111104030	SABITA PAIN	8649827013
13	II-182	22111104036	PRIYANKA MAJI	7319348435
14	II-162	22111104007	DIPALI DUTTA	8101009023
15	II-202	22111104023	SHREYA GHOSHAL	7810818735
Barrackpore Rastraguru Surendranath Colleg, 6, Riverside Road & 85, Middle Road,Pin: 700 120, West Bengal, Indaia				
6th sem				
16	VI-		SOUMYAK BAIN	
17	VI-		ANANDA PRASAD	

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (BAMBOO CRAFTS MAKING AND CLAY POTTARY MAKING)) 29TH & 30TH MAY, 2023				
1	VI-148	20111104010	KAILASH BAURI	7364028065
2	IV-164	22111104054	JISHU KARMAKAR	
3	IV-166	22111104038	JIT BARAT	9641177485
4	VI-758	22111204041	NITAI MAHATA	8327091505
5	197	22111104008	SARASWATI MAHATA	7872456522
6	218	22111104048	SUSMITA MAHATA	8710023208
7	VI-1320	20111203008	PARUL MURMU	9339293965
8	II-970	1112203388	NILIMA TUDU	9083378982
9	VI-444	20111204046	SIDDHISWAR MURMU	7583989506
10	IV		MALLIKA MAHATA	
11	IV-217	9749371989	PAMPA KARMAKAR	9749371989
Barrackpore Rastraguru Surendranath College, 6, Riverside Road & 85, Middle Road, Pin: 700 120, West Bengal, India				
12		IV-	SAHIL PAL	
13		IV-	BISWAJIT SINGH	

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (CLAY DOLL MAKING AND CLAY POTTARY MAKING)

29TH & 30TH MAY, 2023

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (BEL MALA MAKING)

29TH & 30TH MAY, 2023

1	VI-178	20111104045	ANWESHA KARAK	9883353771
2	VI-147	20111104004	SAMPA BAURI	9933168136
3	VI-150	20111104054	MITHU PATRA	9883270625
4	VI-144	20111104046	PRIYA PATRA	9635353723
5	VI-168	20111104053	MINAKSHMI PANDA	8116835564
6	VI-153	20111104021	LAKSHMI MAHATA	8159840907
7	188	20111104020	LAXMI MANDAL	8116281608
8	IV-158	21111104006	PIU KARMAKAR	9547592206
9	IV177	21111104008	RADHA KARMAKAR	7857092556
10	IV-158	21111104028	PAMPA KARMAKAR	9083524435
11	II-220	22111104024	TANUSHREE KARMAKAR	8167706838
12	II-157	22111104043	BARSHA SINGHAMAHAPATRA	7601904528
13	II-189	22111104055	RINA DULEY	8972198113
14	II-170	22111104041	KOYEL MANDAL	9883343836
15			SANCHITA MAHATA	

Barrackpore Rastraguru Surendranath College, 6, Riverside Road & 85, Middle Road, Pin: 700 120, West Bengal, India

16	IV		B.SUMIT RAO	
17	IV		AKASH KUMAR RAM	

KHATRA ADIBASI MAHAVIDYALAYA,KHATRA BANKURA

TWO DAYS WORKSHOP ON HANDICRAFTS MAKING (TABLA MAKING AND CLAY POTTARY MAKING)

29TH & 30TH MAY, 2023

1	VI-178	19111104027	TRIPTI PATRA	9564090930
2	VI-194	20111104002	KRISHNA MAHAPATRA	9800915352
3	VI-178	19111104027	TRIPTI PATRA	9564090930
4	VI-164	19111104017	DISHA GANGULY	7319126857
5	VI-206	20111104015	TANUSHREE BAURI	8016488543
6	IV-		SANGHA MITRA KARMAKAR	
7	IV-180	20111104042	MITA MANDAL	6294830544
8	IV-157	21111104029	MAMPI KARMAKAR	7679593011
9	IV-211	21111104031	PUJA CHAND	9635447091
10	II-204	22111104019	SONALI KARMAKAR	8710075748
11	II-181	22111104020	PRIYANKA KARMAKAR	8617532460
12	II-203	22111104031	SOMA BIT	7908429416
13	II-158	22111104035	BEAUTI GOPE MANDAL	9732282196
14	II-190	22111104014	RINKU MAHATA	6295184762
15	II-1402	22111104010	SEFALI MANDAL	7063421852
16	VI		PRITTAM SWANAKATR	
17	VI		AKASH HALDAR	

SNAPSHOTS:


KHATRA ADIBASI MAHAVIDYALAYA
Shot on OnePlus × Hasselblad
Makrara, Medinipur Division 2023.05.29 14:00
By SOURAV


KHATRA ADIBASI MAHAVIDYALAYA
TWO DAYS WORKSHOP ON HANDICRAFTS MAKING
Date: 29 th & 30 th May,2023
VENUE: KHATRA ADIBASI MAHAVIDYALAYA
ORGANISED BY: THE DEPATMENT OF HISTORY
UNDER THE AEGIS OF IQAC, KHATRA ADIBASI MAHAVIDYALAYA
Shot on OnePlus × Hasselblad
Makrara, Medinipur Division 2023.05.29 15:15
By SOURAV


realme Shot by Piku


BARRACKPORE RASTRAGURU SURENDRANATH COLLEGE
DEPARTMENT OF HISTORY
WORKSHOP ON HANDICRAFTS MAKING
May 29 - 30, 2023
Organized by
DEPARTMENT OF HISTORY
KHATRA ADIBASI MAHAVIDYALAYA
Shot on OnePlus × Hasselblad
Makrara, Medinipur Division 2023.05.29 16:44
By SOURAV


GPS Map Camera
Makrara, West Bengal, India
2V24+JR7, Makrara, West Bengal 722140, India
Lat 23.001656°
Long 86.857082°
30/05/23 10:31 AM GMT +05:30
Google


KHATRA ADIBASI MAHAVIDYALAYA
TWO DAYS WORKSHOP ON HANDICRAFTS MAKING
Shot on OnePlus × Hasselblad


GPS Map Camera
Ajhapur, West Bengal, India
42JX+4QV, SH15, Ajhapur, West Bengal 713401, India
Lat 23.130488°
Long 88.04952°


realme Shot by Piku

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF GEOGRAPHY

(PROJECT WORK/FIELD WORK 2022-23)

MAPS AND DIAGRAMS

PAPERCODE: SP/GEO/301/C-1C

Submitted by

3rd Semester Programme Students

[12.08.2022 to 01.03.2023]

UNDER THE GUIDANCE OF

- SRI BHANU KUMAR MANDAL
- DR. KOUSHIK MANDAL
- SRI JAYANTA KARMAKAR

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct **Project Work/Field Work on Maps and Diagrams under Geography Course, Course code: SP/GEO/301/C-1C**

Khatra Adibasi Mahavidyalaya Estd.-1979 Khatra, Bankura

Respected Sir/Madam,

I am writing to seek your kind support to conduct a Project Work/Field Work as an outcome of a semester-long course titled: **"MAPS AND DIAGRAMS"** as a part of **Geography Course, Course code: SP/GEO/504/SEC-3,** associated with project/field study for 3rd semester students. The course outcome is mentioned in the curriculum: The project work "**MAPS AND DIAGRAMS**" has been settled from departmental meeting and going to be scheduled on and from 12.08.2022 to 01.03.2023. These activities are crucial for the practical understanding and application of the theoretical knowledge gained by the students during their studies.

I assure you that I will adhere to all the guidelines and regulations of the college during this project/field work. I will also ensure that this work will not disrupt other regular activities of the college or the place involved.

I kindly request you to grant me the necessary permission to undertake this field work. I am confident that this experience will significantly contribute to the academic and professional growth of the students.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

* Bhanu Kumar Mandal
* Dr. Koushik Mandal
* Jayanta Karmakar

[Shri. Bhanu Kumar Mandal, Dr Koushik Mandal, Shri Jayanata Karmakar]
Faculty Team, Department of Geography
Khatra Adibasi Mahavidyalaya

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

for B Mandal 01.03.23.

Departmental seal

Head
Department of Geography
Khatra Adibasi Mahavidyalaya

Department of Geography Khatra Adibasi Mahavidyalaya EXAMINED

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF GEOGRAPHY

(PROJECT WORK/FIELD WORK 2022-23)

MAPS AND DIAGRAMS

PAPERCODE: SP/GEO/301/C-1C

Submitted by

SRABANI DUTTA

UNDER THE GUIDANCE OF

- SRI BHANU KUMAR MANDAL
- DR. KOUSHIK MANDAL
- SRI JAYANTA KARMAKAR

Aims and Objectives

Course Title: Maps and Diagrams (PROJECT & FIELD WORK)

Course Code: SPGEO/301/C-1C

Department of Geography, Khatra Adibasi Mahavidyalaya

Introduction

Maps and diagrams are essential tools in geography, providing a visual representation of data that can reveal patterns and relationships not immediately apparent from raw data. This course, Maps and Diagrams (SPGEO/301/C-1C), aims to equip students with the skills and knowledge needed to construct, interpret, and analyze various types of maps and diagrams. These skills are crucial for understanding geographical phenomena and for communicating geographical information effectively.

Aims

1. **Develop Technical Skills**: Equip students with the technical skills required to construct and interpret various types of maps and diagrams.
2. **Enhance Analytical Abilities**: Foster the ability to analyze spatial data and identify patterns and relationships within geographical information.
3. **Promote Critical Thinking**: Encourage critical thinking about the choice and use of different cartographic techniques in representing geographical data.
4. **Practical Application**: Provide hands-on experience with tools and methods used in cartography and surveying to ensure practical understanding and application.
5. **Integration of Knowledge**: Integrate knowledge from physical and human geography to provide a comprehensive understanding of spatial relationships and processes.

Objectives

Unit 1: Construction of Linear and Comparative (Unit)

- **Linear Diagrams**: Teach students to construct and interpret linear diagrams for various geographical data.
- **Comparative Diagrams**: Enable students to create comparative diagrams that effectively compare different sets of geographical data.

Unit 2: Cartograms

- **Circle, Square, and Pie Graphs**: Instruct students on constructing and interpreting cartograms using circles, squares, and pie graphs to represent geographical data proportionally.
- **Application**: Emphasize the importance and application of cartograms in visualizing population data, economic activities, and other geographical phenomena.

Unit 3: Age-Sex Pyramid and Dependency Ratio

- **Age-Sex Pyramid**: Train students in constructing age-sex pyramids to analyze population structures.
- **Dependency Ratio**: Teach students to calculate and interpret dependency ratios to understand the economic implications of different population structures.

Unit 4: Population Maps and Diagrams

- **Population Density by Choropleth Maps**: Guide students in creating choropleth maps to represent population density and understand its spatial distribution.
- **Distribution by Dot and Sphere Maps**: Instruct students on constructing dot and sphere maps to depict the distribution of population and other data points.

Unit 5: Map Projections

- **Nature and Classification**: Introduce students to the nature and classification of map projections and their significance in geography.
- **Construction and Properties of Select Map Projections**:
    1. **Simple Conical Projection with One Standard Parallel**: Teach students the construction and properties of this projection and its applications.
    2. **Cylindrical Equal Area Projection**: Explain the construction and use of cylindrical equal area projections in representing geographical data.
    3. **Polar Zenithal Stereographic Projection**: Instruct on the construction and applications of polar zenithal stereographic projections.

Unit 6: Surveying

- **Prismatic Compass**: Provide hands-on training in using the prismatic compass for field surveys and mapping.
- **Dumpy Level**: Teach students the use of the dumpy level for accurate measurement of land elevations and gradient assessments.

Unit 7: Field Report

- **Extent and Space Relations**: Guide students in analyzing and reporting the extent and spatial relations of a given study area.
- **Data Sources and Methodology**: Instruct on identifying data sources and selecting appropriate methodologies for geographical research.
- **Physical Environment**: Train students to assess and report on various aspects of the physical environment, including lithology, drainage, slope, climate, soil, and vegetation.
- **Socio-Economic Environment**: Teach students to evaluate and document the socio-economic environment, including population characteristics, occupational structure, ethnic and religious composition, and per-capita income.

A descriptive report on Construction of Linear and Comparative (Unit), Cartograms: Circle, Square and Pie graph, Age-Sex Pyramid, Dependency Ratio, Population Maps and Diagrams: Population Density by Choropleth, Distribution by Dot and Sphere, Map Projections: Nature and Classification, Construction and Properties of select Map Projections: 1. Simple Conical Projection with one standard parallel, 2. Cylindrical equal area, 3. Polar Zenithal Stereographic projection, Surveying: 1. Prismatic Compass 2. Dumpy Level, Field Report (Narayanpur Village, Namkhana C.D. Block, Sundarban, 24-Parganas (S): 1. Extent and Space Relations, 2. Data sources and Methodology, 3. Physical Environment: Lithology, Drainage, Slope, Climate, Soil, Vegetation etc. 4. Socio Economic Environment: Population Characteristics, Occupational Structure, Ethnic and Religions Composition, Per-Capita Income.

The work has been worked out as the Project & Field Work on Maps and Diagrams (Course Code: SP/GEO/301/C-1C) which has been attached in vernacular language (Bengali) form.

P.T.O

■ Draw a linear scale with the R.F. 1:100000 to represent 2 mile and 1/2 mile in the primary and secondary division respectively.

Primary Division → 2 mile
Secondary Division → 1/2 mile

Therefore 1 inch map distance is represented is 100000 inch ground dis
∴ Therefore in inch Ground distance represented is $\frac{100000}{63360} = 1.58$ mile

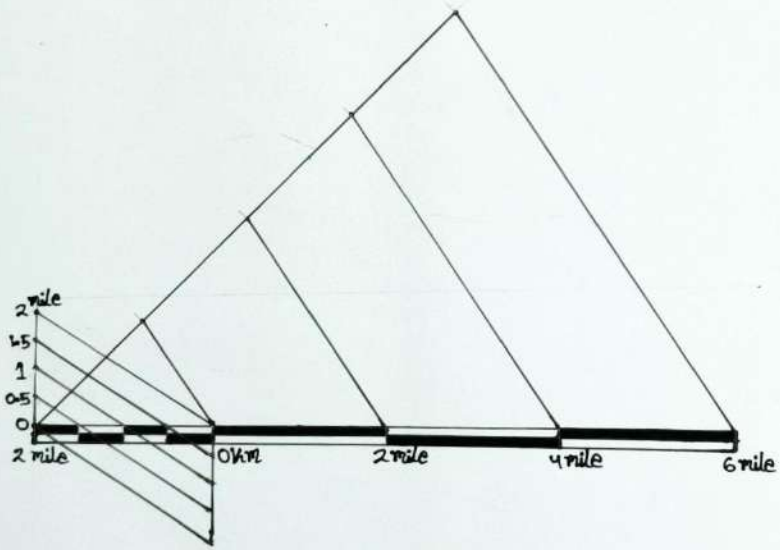
1 inch map distance is represented is 1.58 mile Ground distance
1.58 mile Ground distance represented 1 inch map distance.
1 mile Ground distance represented $\frac{1}{1.58}$ inch map distance.

$= \frac{2}{1.58}$

map distance = 1.26 inch

∴ Hence the number of Primary division are = 4

LINEAR SCALE



Draw a linear scale so that 15 K.m. and 3 K.m. of the Primary and secondary divisions can be read out respectively with the R.F - 1:500000.

R.F = 1:500000

∴ Primary division = 15 K.m

secondary division = 3 K.m

∴ Map distance = Ground distance

= 500000

∴ Map distance 1 cm = Ground distance 500000 cm

∴ Ground distance = $\frac{500000}{100000}$ = 5 Km

Ground distance 5 Km = Map distance

1 Km = $\frac{1}{5}$

15 Km = $\frac{1}{5} \times 15$

= 3 cm

the number of

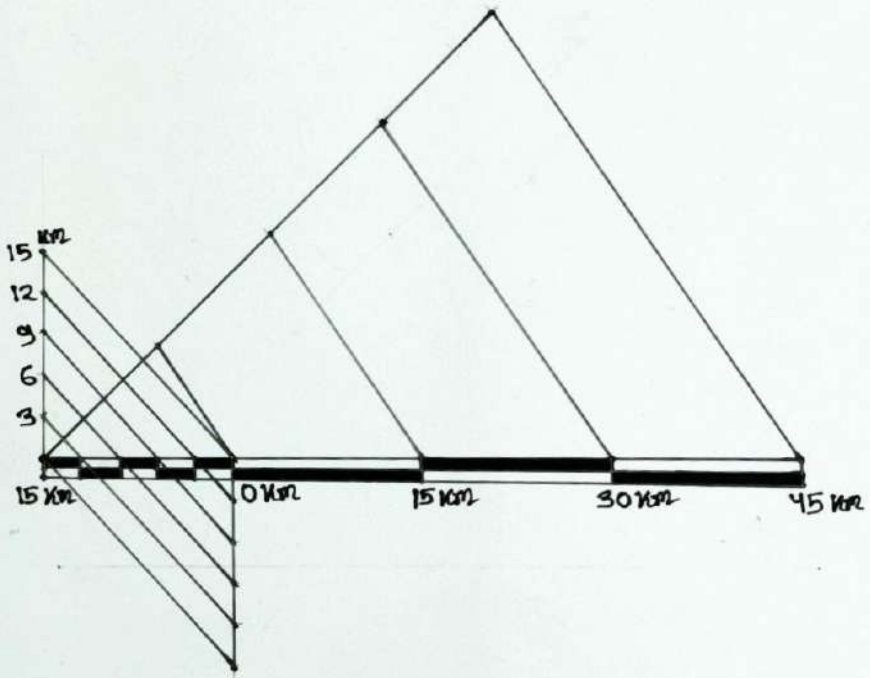
Total Ground 15×4 = 60 cm

∴ Map distance = 3×4 = 12 cm

∴ secondary distance number = $\frac{15 \text{ Km}}{3 \text{ Km}}$

= 5

LINEAR SCALE

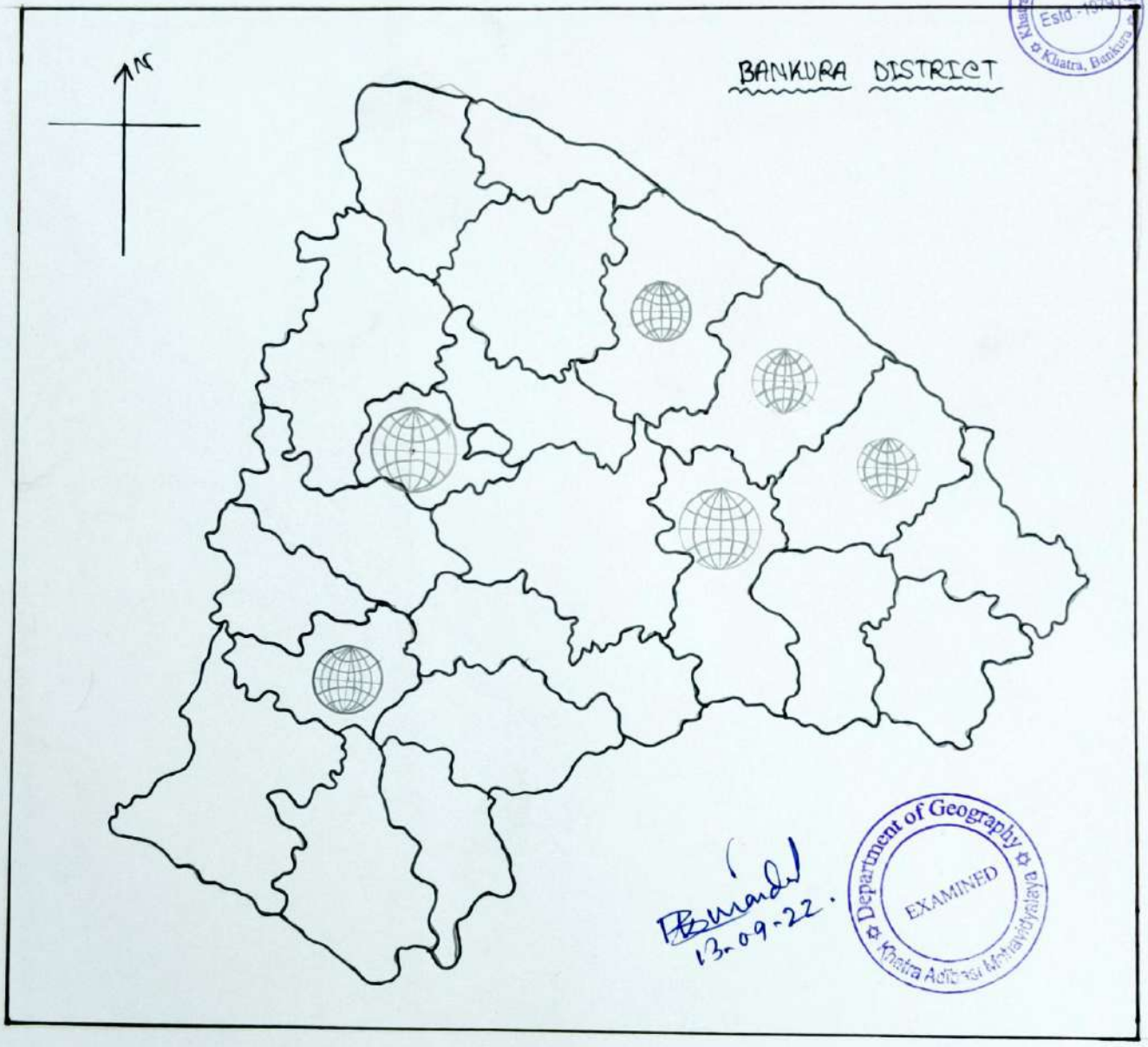


*** Prepare a sphere map for the urban population of District Bankura.

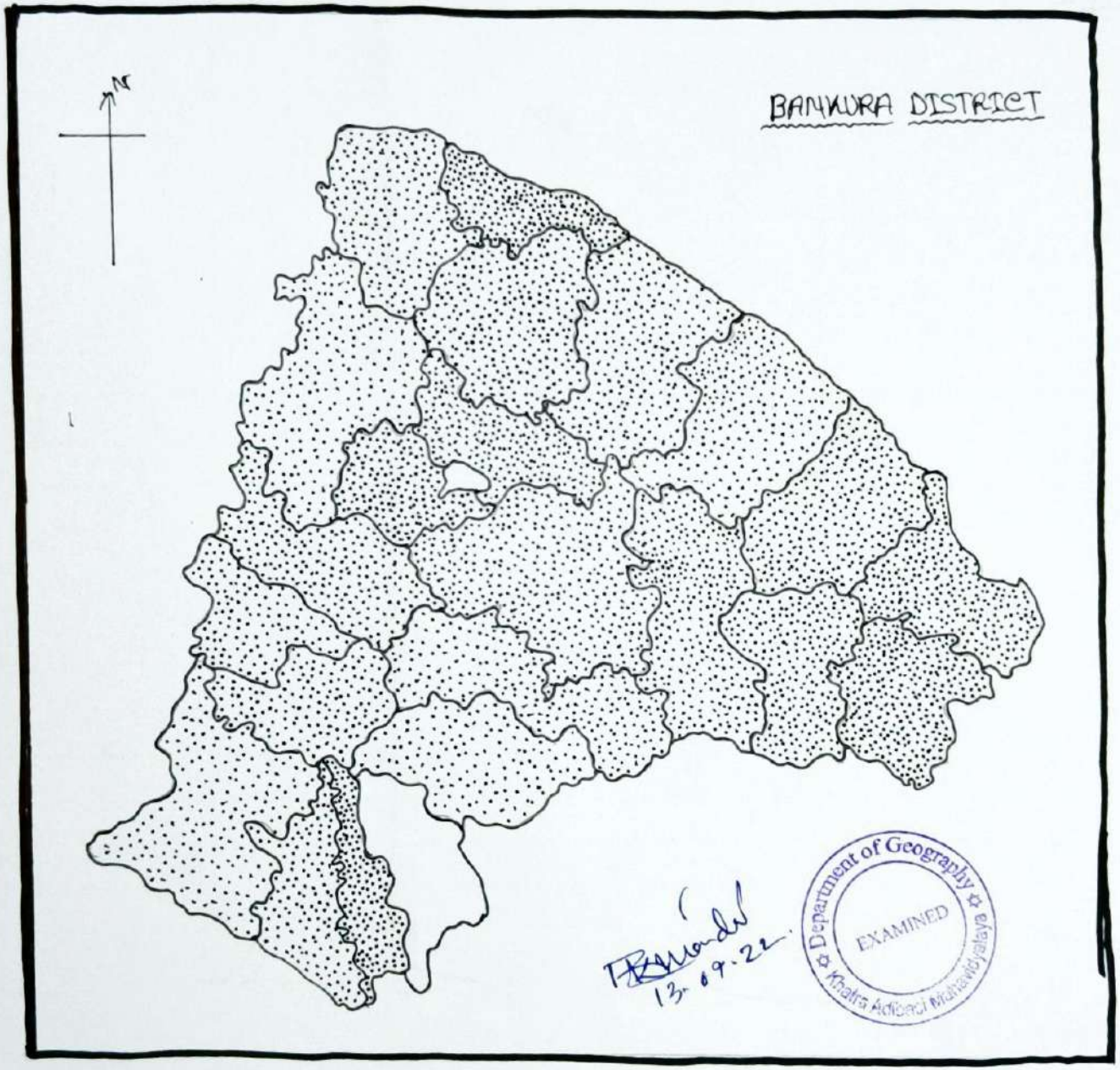
Town	Barjora	Beliator	Khatra	Bishnupur	Sonamukhi	Patrashyer	Bankura	X
Urban Population	9554	4745	13265	56128	24640	9270	1148	X

=> আনুপাতিক ব্যাসার্ধ (r) = 0.62035 $\sqrt[3]{Pu}$.

Name of Town	Urban Population (Pu)	r = 062035 $\sqrt[3]{Pu}$	(r) in scale 1cm = 2 unit
Barjora	9554	13.16	0.22
Beliator	4745	10.42	0.18
Khatra	13265	14.68	0.25
Bishnupur	56128	23.75	0.40
Sonamukhi	24640	18.05	0.30
Patrashyer	9270	13.63	0.23
Bankura	1148	30.15	0.50
For	Graphical	Scale	
1	5000	10.60	0.18
2	50000	22.85	0.38
3	100000	28.79	0.48



SOWING DISTRIBUTION OF RURAL POPULATION OF BANKURA DISTRICT



13.09.22

Prepare a dot map to show Rural Population of Bankura according to the data given in the page 195.

Sl.No	C.D Block	Rural Population	Area (Sq.km)	Population density Per (km)	No.of dots	Remarks
1	Sonamukhi	123665	368.30	335.77	247	
2	Patrashayer	131330	312.34	420.47	263	
3	Kotulpur	144528	250.50	576.96	289	
4	Indas	135344	255.10	518.79	265	
5	Joypur	122082	262.74	464.65	244	Desity
6	Bishnupur	155286	392.00	396.13	311	based
7	Ranibandh	93748	428.40	218.83	187	~~method~~
8	Gangajalghati	143595	371.20	386.84	287	applied mod
9	Barjora	144761	384.63	376.36	290	scale
10	Saltora	110929	314.13	353.13	222	1:714000
11	Onda	191078	502.20	380.48	382	1dot=500
12	Taldangra	111573	349.70	319.05	223	Rural
13	Simlapal	111308	309.20	359.99	139	Population
14	Mejhia	69294	162.90	425.38	216	
15	Raipur-I	107951	298.96	361.09	216	
16	Raipur-II	107919	293.51	367.68	312	
17	Chatna	156147	441.00	354.07	250	
18	Indpur	125106	300.20	416.74	223	
19	Bankura-I	84437	167.64	503.68	169	
20	Bankura-II	107141	252.30	424.66	214	
21	Khatra-I	76149	224.89	338.61	152	
22	Khatra-II	62216	215.60	288.57	124	

* Draw neat Graticules of cylindrical Mural easy Projecti for the easy extending from 40°N to 40°S and 20°W to 60°E interval of 10° what a scale 1:750,000,000.

$$= \frac{640,000,000}{750,000,00} \text{ cm}$$

$$= 8.5 \text{ cm}$$

Litude 40°N to 40°S

40°N-30°N-20°N-10°N 0° 10°S-20°S-30°S-40°S

Long Litude

20°W to 60°W

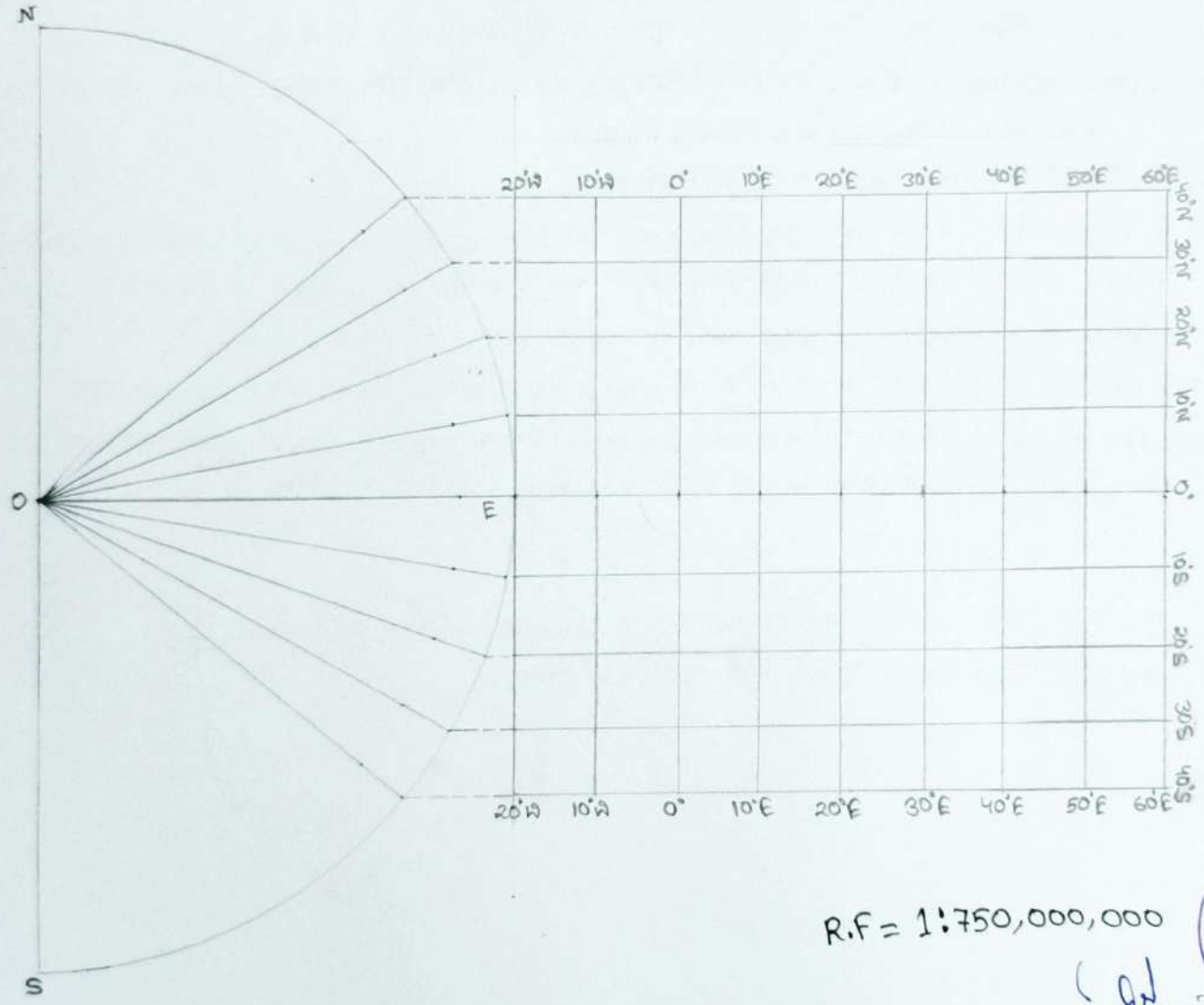
20°W-10°W 0° 10°W-20°W-30°W-40°E-50°E-60°E

∴ Litude and Long Latitude Interval 10°

ব্যাখ্যা :-

এই অভিক্ষেপে অভিক্ষেপ তলটি হলো একটি Generating Globe কে নিরক্ষরেখায় স্পর্শক করে থাকে। গ্রোবের অভিক্ষেপ অক্ষরেখা ও অক্ষিমা রেখাগুলি সমদূরত্বে মাপা হয়। এবং অক্ষরেখাগুলি নিরক্ষরেখার সমান্তরাল রেখায় অভিক্ষিপ্ত হয়। প্রত্যেকটি অক্ষরেখার দৈর্ঘ্য সমান এবং সমান দূরত্বে অবস্থান করে। নিরক্ষরেখার থেকে যত মেরু রেখার দিকে যাওয়া যায়। অক্ষরেখাগুলির মধ্যকার দূরত্ব কম হয়ে থাকে।

CYLINDRICAL EQUAL AREA PROJECTION



R.F = 1:750,000,000

13.09.22

অঙ্কন প্রণালী :-

i) খাতার বাঁমদিকে একটি উল্লম্ব রেখাংশ নিলে।

ii) উল্লম্ব রেখাটির মধ্য দিয়ে 8.5 cm দৈর্ঘ্যের একটি অংশ কেটে নিলাম।

iii) O বিন্দুতে কম্পাস বসিয়ে 8.5 cm রেখাংশের সমান মাপ নিয়ে উল্লম্ব রেখাটির উপর O কে কেন্দ্র করে একটি বৃত্তচাপ অঙ্কন করলাম।

iv) O বিন্দুর সাথে 90° বিন্দুটি যুক্ত করে বর্ধিত করলাম।

v) O বিন্দুতে চাঁদা বসিয়ে OE আনুভূমিক রেখা বিষুবরেখার উপরের দিকে 10° Interval চারটি কোণ অঙ্কন করলাম। এবং OE আনুভূমিক রেখার নিচের দিকে ৫টি কোণ অঙ্কন করলাম।

vi) এখানে ওই বিন্দুগুলিকে O বিন্দুর সাথে যুক্ত করতে হবে NS বৃত্তচাপ পর্যন্ত।

vii) এখানে E বিন্দুতে চাঁদা বসিয়ে একটি 90° অঙ্কন করলে যা NS বৃত্তচাপটিকে স্পর্শ করবে।

viii) NS বৃত্তচাপটির উপর অবস্থিত যে কোন দুটি কৌণিক বিন্দুর Interval কম্পাসের মাধ্যমে নিয়ে সেই মাপকে ব্যবহার করে E বিন্দুর ডান দিকে পর পর ৭টি বিন্দু নিলে।

** গুণাগুণ :-

i) অক্ষরেখা গুলি পরস্পর ব্যবধান মেরু হতে বিষুবরেখার দিকে বাড়তে থাকে।

ii) অক্ষরেখা গুলি বিভিন্ন ব্যাসার্ধ যুক্ত এবং একেকটা বৃত্ত।

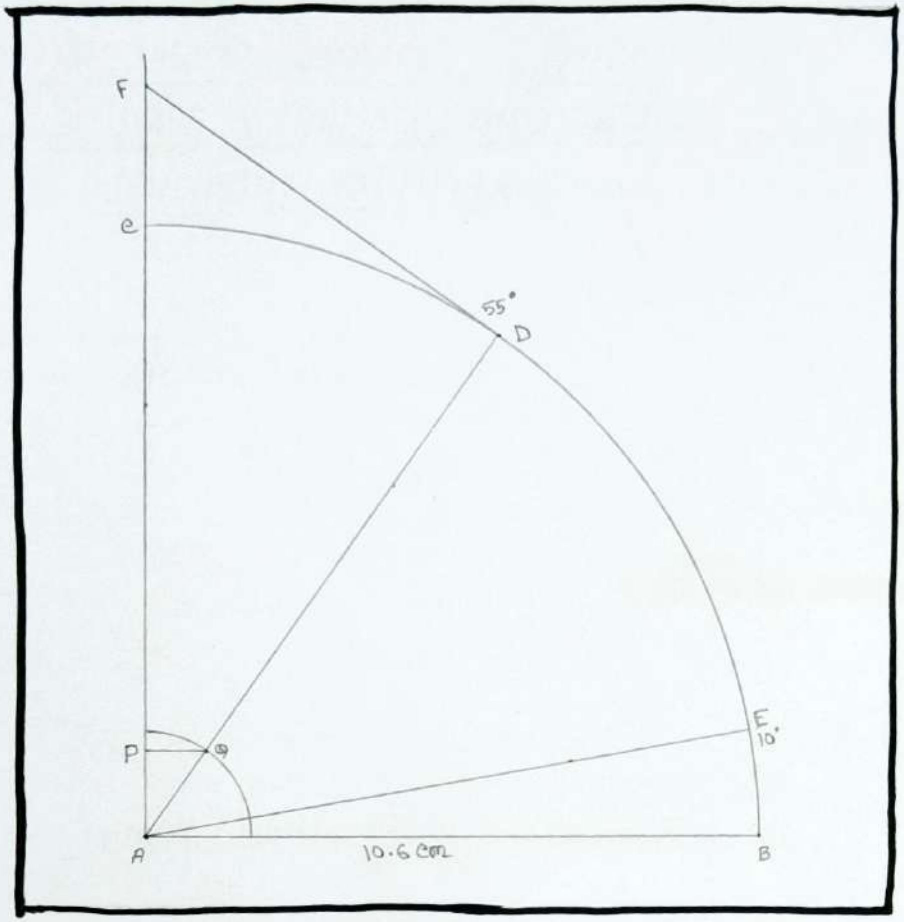
** Draw a Simple conical Projection with one standard Parallel for the map for of europe extending for 35°N to 75°N and 20° west 60°E at interval of 10° on a scale 1:60000000.

□□ নীতি :- শঙ্কু আকৃতির যে অভিক্ষেপ অভিক্ষেপ তল যে অক্ষরেখা বরাবর Generating Globe কে স্পর্শ করে থাকে Standard Parallel বা প্রমাণ বা বিশিষ্ট অক্ষরেখা বলে। এই অভিক্ষেপে প্রমাণ অক্ষরেখা ও কেন্দ্রিক বা মধ্য দ্রাঘিমা রেখা সরল। এই অভিক্ষেপ তলের উভয় Generating Globe কেন্দ্র থেকে চারদিকে ছড়িয়ে পড়ে। অক্ষরেখাগুলি বৃত্ত চাপের মত কিন্তু দ্রাঘিমা রেখাগুলি সরলরেখা মত হয়।

Rading of the Generating Globe (R) = $\frac{\text{Actual radius of earth}}{\text{Dinominator of R.F}}$

$= \frac{6,40,000,000}{60000000}$

$= 10.6$ cm



অঙ্কন প্রণালি :-

i) খাতার মাঝ বরাবর কেন্দ্রীয় বা মধ্য দ্রাঘিমারেখা উপস্থাপন করার জন্য উল্লম্ব রেখা অঙ্কন করা হল।

ii) এই সরলরেখার উপর একটি 90° কোণ অঙ্কন করলাম চাঁদার সাহায্যে।

iii) AB সরলরেখার মাপ নিয়ে BC একটি অর্ধবৃত্ত অঙ্কন করলাম।

iv) প্রশ্নে Standart Parallal 55° কোণ দেওয়া আছে সেটি অঙ্কন করলাম।

v) 10° interval অক্ষাংশের প্রতিসমক অঙ্কন করলাম।

vi) 55° Standart Parallal-এ চাঁদার সাহায্যে 90° অঙ্কন করলাম।

vii) 10° internal-এর মাপ নিয়ে A বিন্দুতে বসিয়ে অর্ধবৃত্ত অঙ্কন করলাম।

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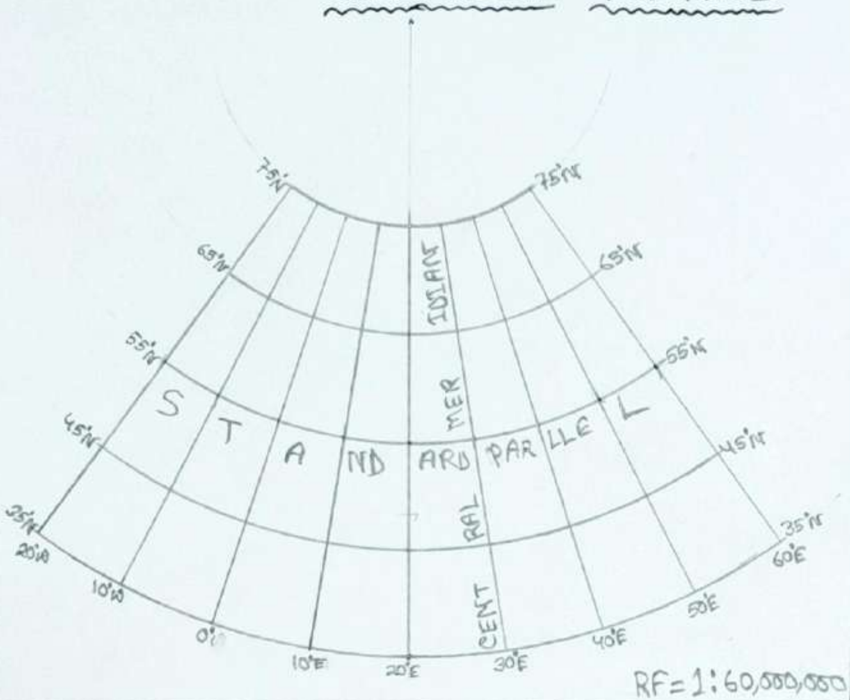
SIMPLE CONICAL PROJECTION WITH ONE STANDARD PARALLEL GRAPHICAL METHOD



* অঙ্কন প্রণালী :-

i) খাতার মাঝবরাবর উত্তর দক্ষিণ সরলরেখা অঙ্কন করলাম।

ii) ঐই রেখার উত্তর বিন্দু থেকে DF-এর মাপ নিয়ে মাঝ বরাবর একটি ব্যাসার্ধ কাটলাম।

iii) উত্তর দক্ষিণ সরলরেখা আর ব্যাসার্ধ যে বিন্দুতে ছেদ করলো সেই বিন্দু থেকে উত্তর দিকে DF-এর মাপ দুটি ব্যাসার্ধ কাটলাম, আর দক্ষিণ দিকেও দুটি ব্যাসার্ধ কাটলাম।

iv) নীচের দিকের শেষ ব্যাসার্ধের উপর PQ মাপ নিয়ে, নীচের দিকে বিন্দু থেকে পূর্ব দিকে চারটি এবং পশ্চিম দিকে চারটি ব্যাসার্ধ কাটলাম।

v) এই ব্যাসার্ধ গুলির বিন্দু থেকে প্রথমের বিন্দুতে যুক্ত করলাম।

* **গুনাগুন** :-

i) এই অভিক্ষেপকে দৃশ্যানু অভিক্ষেপ বলে।

ii) এই অভিক্ষেপে অক্ষরেখা গুলি এক কেন্দ্রিক বৃত্তচাপ এবং দ্রাঘিমা রেখা গুলি হল সরল রেখার ন্যায়।

iii) এই অভিক্ষেপ নাতিশীতোষ্ণ বা মধ্য অক্ষাংশীয় অঞ্চলের ক্ষুদ্রাকৃত দেশের মানচিত্র অঙ্কনে বিশেষ উপযোগী।

* **সুবিধা** :-

i) এই অভিক্ষেপের কেন্দ্র বিন্দু হল আলোর উৎস।

ii) Standard Parallal থেকে নিরক্ষরেখার দিকে ঋণাত্মক বিকৃতি ঘটে।

* **অসুবিধা** :-

i) জেনোমেটিং দ্যুলোকের কেন্দ্র বিন্দু অবস্থান করানো, এই অভিক্ষেপে তা বৃত্তচাপ রূপে উপস্থাপিত হয়।

ii) এই অভিক্ষেপে আকৃতি ও বিচ্যুতি অধিক ঘটে, তাই কেবল মাত্র খণ্ড পরিসরের অক্ষাংশ মত দেশ ছাড়া, এই অভিক্ষেপে অন্যান্য দেশ আঁকা যুক্তিযুক্ত নেই।

* **ব্যবহার** :-

i) পরিমিত অক্ষরেখা দুই দিকে খণ্ড পরিসর স্থানের আয়তন নির্ভুল বলে এই অভিক্ষেপটি কেবল মাত্র যেইসব দেশের মানচিত্র অঙ্কনের জন্য উপযুক্ত যে দেশ গুলি পূর্ব-পশ্চিমে বেশি বিস্তৃত।

ii) সাধারণত মধ্য অক্ষাংশ বা নাতিশীতোষ্ণ অঞ্চলের দেশ গুলি এই অভিক্ষেপে আঁকা হয়।

* **সীমাবদ্ধতা** :-

i) এই অভিক্ষেপের সাহায্যে পৃথিবীর মানচিত্র আঁকা যায় না।

ii) এই অভিক্ষেপে সাতার মাঝ বরাবর কেন্দ্রীয় বা মধ্য দ্রাঘিমা রেখা উপস্থাপন করার জন্য উল্লম্ব রেখা অঙ্কন করা হল।

**** Draw Age-sex Pyramid Diagram and Indicate the Population Structure.

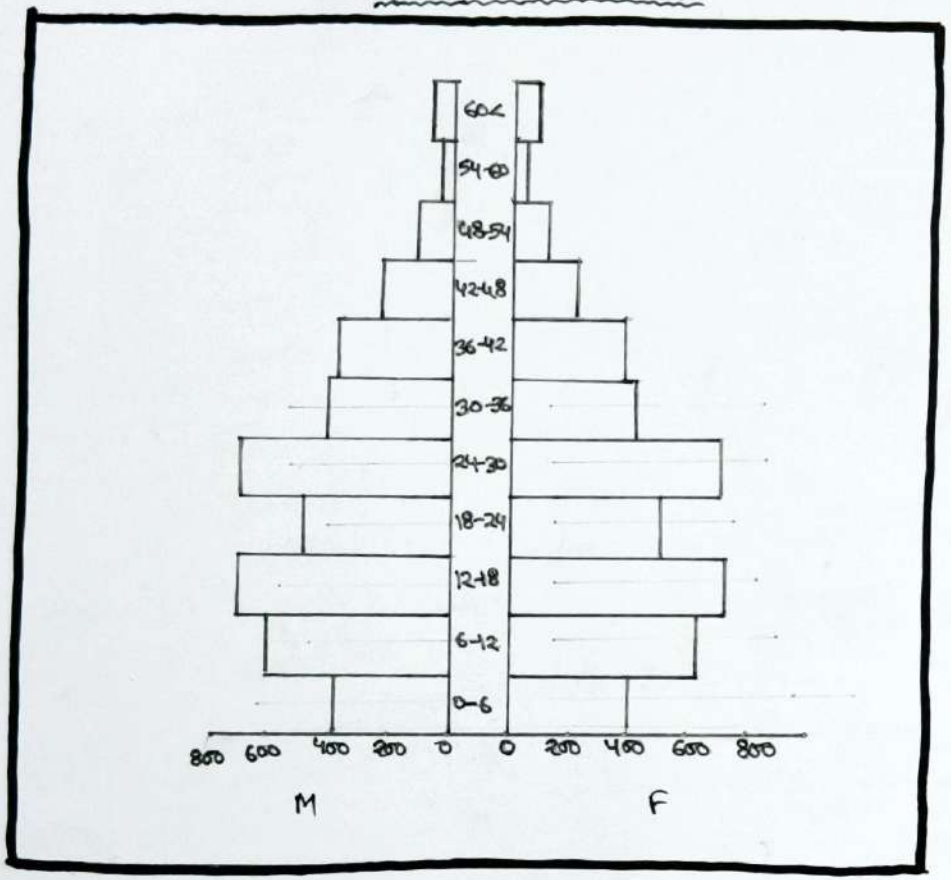
Age-sex Pyramid

Age (year)	0-6	6-12	12-18	18-24	24-30	30-36	36-42	42-48	48-54	54-60	60<	Total
Male	386	625	727	579	681	426	397	255	130	51	91	4348
Female	403	614	682	614	728	421	347	193	91	46	51	4190

Age (year)	0-6	6-12	12-18	18-24	24-30	30-36	36-42	42-48	48-54	54-60	60<	Total
Male (Height in cm)	1.93	3.12	3.63	2.89	3.40	2.13	1.98	1.27	0.65	0.25	0.45	200 Pers
Female (Height in cm)	2.01	3.07	3.41	3.07	3.64	2.10	1.73	0.96	0.45	0.23	0.25	

AGE-SEX PYRAMID

(AGE-YEAR)



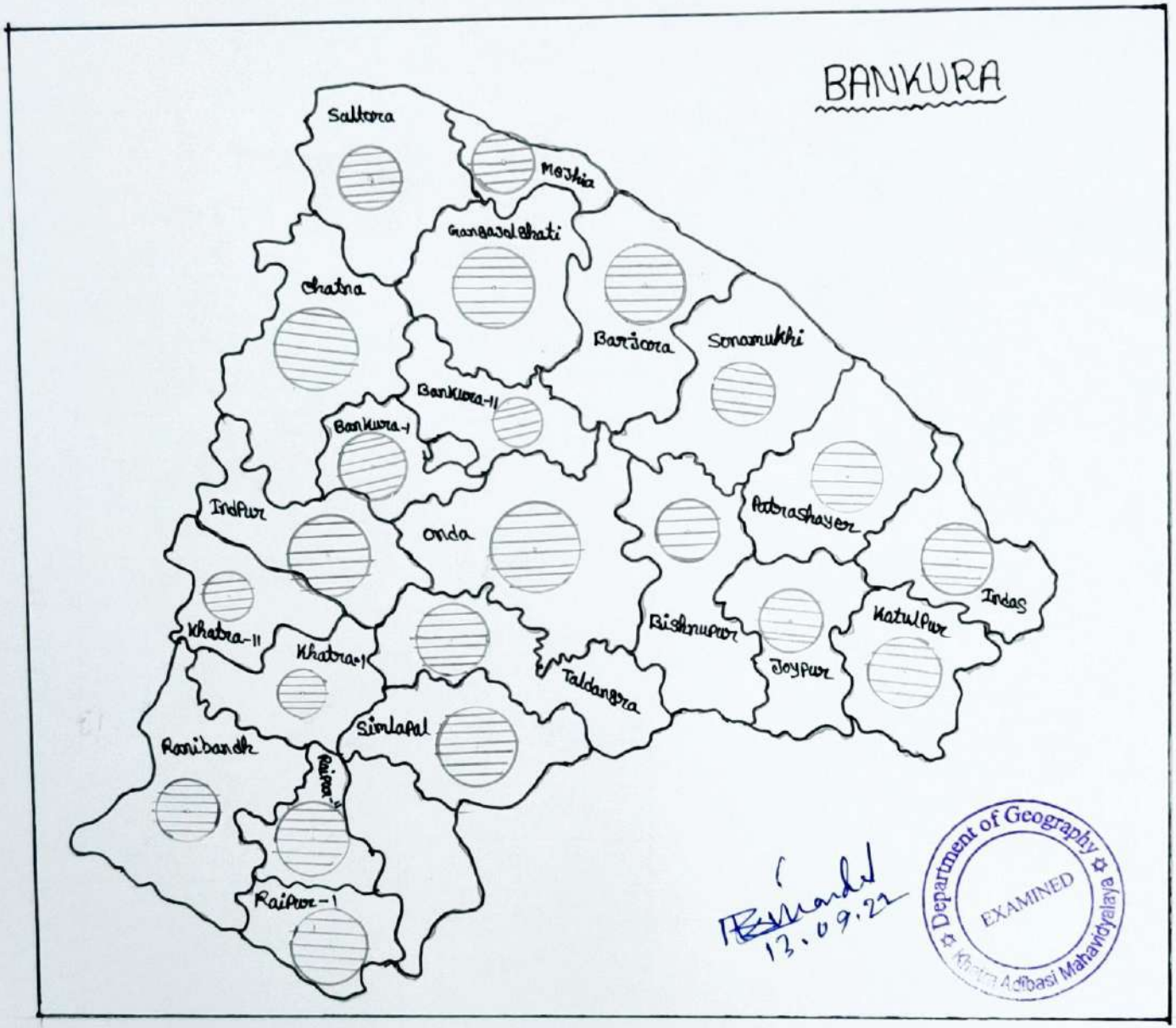
13.09.22

** Draw a Proportional circle from the Given working Population of 22 C.D Block of Bankura district.

Sl.No	C.D. BLOCK	No. of Workers
1.	Sonamukhi	42696
2.	Patraskayer	45961
3.	Katulpur	42809
4.	Indas	41051
5.	Joypur	34906
6.	Bishnupur	38587
7.	Ranibandh	36632
8.	Gangajalghati	48348
9.	Barjora	49045
10.	Saltora	37034
11.	Onda	59586
12.	Taldangra	37089
13.	Simlapal	41068
14.	Mejia	21060
15.	Raipur (1)	40689
16.	Raipur (2)	41214
17.	Chatna	51197
18.	Indpur	42301
19.	Bankura (1)	26585
20.	Bankura (2)	33052
21.	Khatra (1)	32162
22.	Khatra (2)	23472

Sl. No.	C.D. Block	No. of workers	$\pi\left(\frac{22}{7}\right)$	$r = \sqrt{\frac{wt.}{\pi}}$	scale(r) = 1 cm
1	Sonamukhi	42696		116.60	0.58
2	Patrasayer	45961		120.98	0.60
3	Kotulpur	42809		116.76	0.58
4	Indas	41051		114.33	0.57
5	Joypur	34906		105.43	0.52
6	Bishnupur	38587		110.85	0.55
7	Ranibandh	36632		108.01	0.54
8	Gangajalghati	48348		124.08	0.62
9	Barjora	49045		124.97	0.62
10	Saltora	37034		108.60	0.54
11	Onda	59586		137.75	0.68
12	Taldangra	37089		108.68	0.54
13	Simlapal	41068		114.36	0.57
14	Mejia	21060		81.89	0.40
15	Raipur(1)	40689	3.14	113.83	0.56
16	Raipur(2)	41214		114.56	0.57
17	Ghatora	51197		127.69	0.63
18	Indpur	42301		116.06	0.58
19	Bankura(1)	26585		92.01	0.46
20	Bankura(2)	33052		102.59	0.51
21	Khatora(1)	32162		101.20	0.50
22	Khatora(2)	23472		86.45	0.43
	For Graphical Scale				
		25,000		89.22	0.44
		40,000		112.86	0.56
		55,000		132.34	0.66

PROPORTIONAL CIRCLE



13.09.22

* Draw a choropleth map according to the given data and explain it.

SL.NO.	C.D. BLOCK	Population	Area (Sq.km)
1	Sonamukhi	148305	379.95
2	Patrashayer	140600	321.07
3	Kotulpur	144528	250.50
4	Indas	132344	255.10
5	Joypur	122082	262.74
6	Bishnupur	171414	419.01
7	Ranibandh	93718	428.40
8	Gangajalghati	143595	311.20
9	Barjora	159060	393.40
10	Saltora	110929	314.13
11	Onda	191078	502.20
12	Taldangra	111573	349.70
13	Simlapal	111308	309.20
14	Mejia	69297	162.90
15	Raipur-1	107951	208.96
16	Raipur-2	107919	293.51
17	Chatna	150147	441.00
18	Indpur	125106	300.20
19	Bankura-1	199313	186.70
20	Bankura-II	107141	252.30
21	Khatra-1	89414	232.40
22	Khatra-II	62216	215.60

SL. NO	C.D. BLOCK	Population.	Area (Sq. Km)
1	Sonamukhi	390.33	
2	Patrasayer	437.91	
3	Kotulpur	576.96	
4	Indas	518.79	
5	Joypur	464.64	
6	Bishnupur	409.09	
7	Raibandh	218.83	
8	Ganganarayanpur	401.42	
9	Barjora	404.32	
10	Sabtora	353.13	
11	Onda	380.48	
12	Taldangra	319.05	
13	Simlapal	359.99	
14	Mejia	425.40	
15	Raipur-I	361.09	
16	Raipur-II	367.68	
17	Chatra	354.07	
18	Indpur	416.74	
19	Bankura-I	1067.56	
20	Bankura-II	424.66	
21	Khatra-I	384.74	
22	Khatra-II	288.57	

CHOROPLETH MAP

SHOWING POPULATION DENSITY OF BANKURA (2001)

Population density/sq.km	Grade	No. of C.D. Block	Remarks
<310	VI	7, 22	Exclusive method is applied to town classes which house open ends.
310-400	IV	1,10,11,12,13,16,15,17,21	
400-490	III	2,5,6,8,9,14,18,20	
490-580	II	3,4	
>580	I	19	

AREA OF TRAVERSE □ AB'C'D'

□AB'C'D' = △AB'C' + △AD'C'

Length of AC' Line = 9.4 cm

Actual Ground distance of line AC' = (9.4×2) mt
= 18.8 mt

AREA OF △AB'C'

Perimeter of △AB'C' = (AB' + B'C' + AC') mt
= (12 + 10 + 18.8) mt
= 40.8 mt

½ Perimeter of △AB'C'(S) = $\frac{40.8}{2}$ = 20.4 mt

Area of Traverse △AB'C'

$= \sqrt{S(S-a)(S-b)(S-c)}$

$= \sqrt{S(S-AB')(S-B'C')(S-AC')}$

$= \sqrt{20.4(20.4-12)(20.4-10)(20.4-18.8)}$

$= \sqrt{20.4 \times 8.4 \times 10.4 \times 1.6}$

$= \sqrt{2851.4304}$

= 53.39 59 mt

AREA OF AD'C'

Perimeter of △AD'C' = (AD' + D'C' + AC') mt
= (11 + 13 + 18.8) mt
= 42.8 mt

½ Perimeter of △AD'C'(S) = $\frac{42.8}{2}$ = 21.4 mt

Area of △AD'C'

$= \sqrt{S(S-a)(S-b)(S-c)}$

$= \sqrt{S(S-AD')(S-D'C')(S-AC')}$

$= \sqrt{21.4(21.4-11)(21.4-13)(21.4-18.8)}$

$= \sqrt{21.4 \times 10.4 \times 8.4 \times 2.6}$

$= \sqrt{4860.7104}$

= 69.71 59 mt

Area of □AB'C'D'

= △AB'C' + AD'C'

= 53.39 + 69.71

= 123.159 mt

Draw Graticules at 10° Interval on scale 1:125000000 for the extension 90°S to 30°S around the Pole. (Polar zenithal stereo graphic Projection)

* নীতি :-

Polar zenithal sterio graphi Pojection-এর অভিক্ষেপের জন্য নিম্নলিখিত (কেন্দ্র ও প্রক্ষেপ যুক্ত) ইহা Generating Globe-কে মেরুতে স্পর্শ করে। ইহা একটি দৃশ্যমান অভিক্ষেপ। অভিক্ষেপ তলের বিপরীত মেরু হইতে আলোকরশ্মি চতুর্দিকে ছড়িয়ে পড়ে। এই অভিক্ষেপের অক্ষরেখা গুলি বিভিন্ন যুক্ত বৃত্তাকার এবং দ্রাঘিমা রেখা গুলি সরলরেখার মত কেন্দ্র থেকে বাইরের দিকে বিস্তৃত হয়।

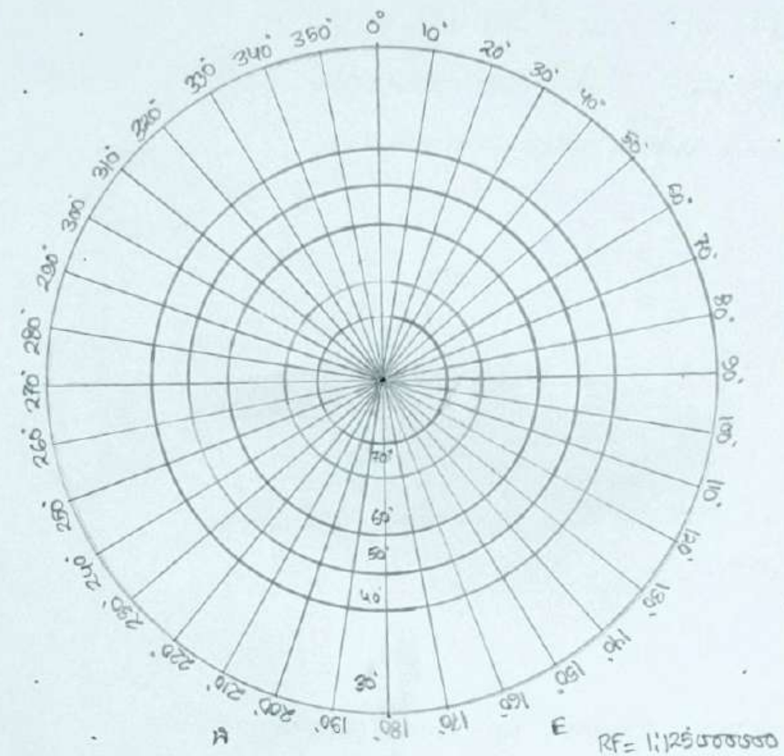
$\therefore$ RF = 1:125000000

$R = \frac{250000000}{125000000}$ inch

= 2 inch

$\emptyset$	R (inch)	2R (inch)	$\frac{(90°-\emptyset)}{2}$	$\tan\left(\frac{90°-\emptyset}{2}\right)$	$2R\tan\left(\frac{90°-\emptyset}{2}\right)$
30°S	2.00	4.00	30°	0.5779	2.30
40°S	2.00	4.00	25°	0.4663	1.86
50°S	2.00	4.00	20°	0.3639	1.45
60°S	2.00	4.00	15°	0.2679	1.07
70°S	2.00	4.00	10°	0.1763	1.70
80°S	2.00	4.00	5°	0.878	0.34
90°S	2.00	4.00	0°	0	0

POLAR ZENITHAL STEREOGRAPHIC PROJECTION



13.09.22.

** অঙ্কন প্রণালী :-

1) প্রথমে সমান্তরালের একটি অনুভূমিক রেখা অঙ্কন করা হল (90°W, 90°E) তারপর তাদের মধ্যবিন্দুতে ঐ রেখার উল্লম্বভাবে আবার একটি রেখা অঙ্কন করা হয় (0°,180°) উত্তর গোলার্ধের গ্রাটিকিউলস অঙ্কনের সময় উপরে এবং নীচে 0° লিখতে হবে।

ii) দুইটি রেখা যে বিন্দুতে ছেদ করেছে, সেই বিন্দুকে কেন্দ্র করে সমকেন্দ্রিক বৃত্ত অঙ্কন করা হয়।

iii) চাঁদার সাহায্যে উল্লিখিত ব্যবধানে দ্রাঘিমারেখাগুলি অঙ্কন করার জন্য বিন্দুগুলি নেওয়া হল।

iv) বিন্দুগুলি স্কেলের সাহায্যে সমকেন্দ্রিক বিন্দুর সঙ্গে দিয়ে যুক্ত করা হল। সেগুলি প্রত্যেকটি দ্রাঘিমারেখা।

v) সঠিকভাবে দ্রাঘিমা ও অক্ষাংশগুলি নামাঙ্কিত করা হল।

** বৈশিষ্ট্য :-

i) অক্ষরেখা গুলি মিডিন্থ ব্যাসার্ধ যুক্ত এক একটি বৃত্ত।

ii) অক্ষরেখাগুলির পরস্পর ব্যবধান মেরু থেকে নিরক্ষরেখার দিকে ধীরে ধীরে বাড়তে থাকে।

iii) প্রাথিমারেখা গুলি সরলরেখার ন্যায় প্রায় মেরু থেকে চারদিকে ছড়িয়ে পড়ে।

iv) দুটি প্রাথিমারেখার মধ্যে দূরত্ব নিরক্ষরেখার দিকে বাড়তে থাকে।

v) এই অভিক্ষেপ যে কোন বিন্দুতে Radial scale এবং Tangential scale।

vi) এই অভিক্ষেপে মেরু অঞ্চলের অবস্থিতি অঙ্কন করা যায়।

* অসুবিধা :-

i) সঠিক আকৃতি বজায় থাকে।

ii) অভিক্ষেপ অঙ্কন ও গণনা সহজ।

* সুবিধা :-

i) এই অভিক্ষেপের উপর অঙ্কিত মানচিত্রের ক্ষেত্র, দিক ও দূরত্ব থাকে না।

ii) এই অভিক্ষেপের ব্যবহার সীমিত।

*** ব্যবহার :-

i) পোলার জেনিথাল মিডিন্থিও আক্ষিক অভিক্ষেপ কেবলমাত্র মেরিডিয়ান মেরু অঞ্চলের দেশ অঙ্কনে ব্যবহার হয়।

ii) এই অভিক্ষেপ থেকে অন্য অভিক্ষেপ রচনা করার প্রাথমিক হিসেবে এটিকে ব্যবহার করা হয়।

FIELD BOOK
CLOSED TRAVERSE SURVEY
BY
PRISMATIC COMPASS

INS. NO-1

Place - COLLEGE CAMPAS

DATE - 11.8.2022

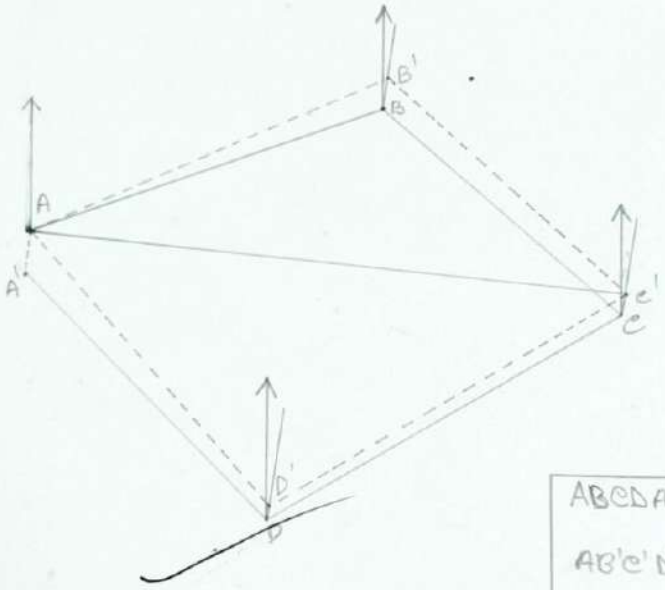
TIME - 1.30 PM

Station	Line	Lenght (in mt)	Scale (1cm to 2m)	Observed Bearing		Difference	Error	½ Error	Corrected Bearing		Remark
				F.B	B.B				f.B	B.B	
A	AB	12	6	70°15'	249°15'	179°	-1°	-0°30'	69°45'	249°45'	Survey Done
B	BC	10	5	130°	311°	181°	+1°	+0°30'	130°30'	310°30'	by clock wise
C	CD	13	6.5	240°30'	57°30'	183°	+3°	+1°30'	239°	59°	All station are partially
D	DA	11	5.5	314°	136°	178°	-2°	-1°	315°	135°	attracted

CLOSED TRAVERES SURVEY BY PRISMATIC COMPASS

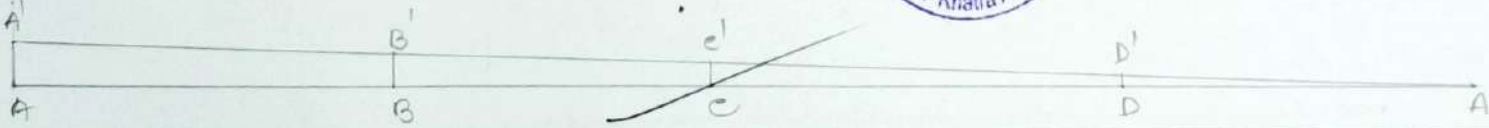
INS.NO-1
PLACE-COLLEGE CAMPUS

DATE-11.08.2022
TIME-1.30 P.M.



ABCDA' → observed Travers
AB'C'D' → corrected Travers
AA' → closser Error
↑ → north Line
Scale → 1cm to 2mt

CLOSSING ERROR DISTRIBUSION
BY
BOWDITCH METHOD



13.09.22.

DETERMINATION OF REDUCED LEVEL BY DUMPY LEVEL

INS NO - 1
PLACE - COLLEGE CAMPUS

DATE - 02.09.22
TIME - 1.30 P.M

Station	Distance (in mt)	Scale (1 cm to 3 mt)	Staff reading (in mt)			Height of collimation	Reduced Level	Remark
			B.S	I.S	F.S			
A	0	0	1.46			85.46	84.00	BM-84 mt
B	3	1.0		1.62		85.46	83.84	
C	6	2.0		1.77		85.46	83.69	
D	9	3.0		1.84		85.46	83.62	
E	12	4.0		1.88		85.46	83.58	
F	15	5.0	1.49		1.47	85.46	83.99	C.P
G	18	6.0		1.48		85.48	84.00	
H	21	7.0		1.52		85.48	83.96	
I	24	8.0		1.44		85.48	84.04	
J	27	9.0		1.63		85.48	83.85	
K	30	10.0			1.63	85.48	83.85	
Σ			2.95		3.1			

Biswanath

⊛ Arithmatic check

$\Sigma B.S \sim \Sigma F.S = F.R.L \sim L.R.L$

$2.95 \sim 3.1 = 84.00 \sim 83.85$

$0.15 = 0.15$

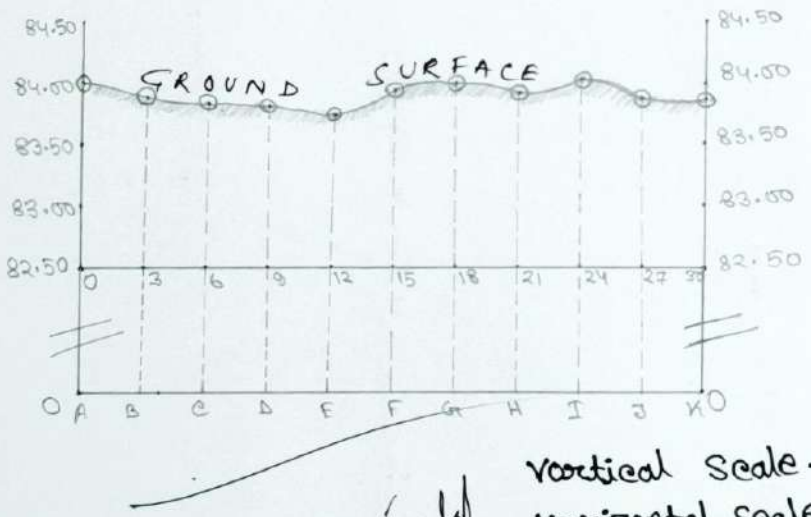
LEVELLING ALONG THE LINE A-K BY DUMPY LEVEL

INS NO - 1

PLACE - COLLEGE CAMPUS

DATE - 0.2.09.22

TIME - 1.30 P.M



Vertical Scale -> 1 cm - 0.5 mt

Horizontal Scale -> 1 cm - 3 mt

14.10.2022

Conclusion

By the end of this course, students will have a solid understanding of various mapping and diagrammatic techniques, the ability to interpret and analyze geographical data, and practical experience in surveying and fieldwork. These skills will be invaluable for their future studies and careers in geography and related fields.

Khatra Adibasi Mahavidyalaya

P.O.: Khatra, Dist. Bankura, West Bengal, Pin: 722140
Phone: 8900057220 E-mail: *khatraacollege@gmail.com/ kacollege@rediffmail.com*
Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Date ..01.03.23.....

Certificate of Project Completion

This is to certify that the following students [3rd semester] of **Department of Geography**, has successfully completed the project work/field work titled **"MAPS AND DIAGRAMS" [Course Code: SP/GEO/504/SEC-3]** under the guidance of **Sri. Bhanu Kumar Mandal, Faculty, Department of Geography, Khatra Adibasi Mahavidyalaya** from 12.08.2022 to 01.03.2023 in the academic year 2022-23.

Sl No.	Name
1	MARKANDA MANDAL
2	AKASH LAI
3	DHIREN MAHATA
4	PAPIYA BAURI
5	ASISH MUDI
6	MUKUNDA SARDAR
7	RIYA MAHATA
8	SRIKANTA SARDAR
9	SRABANI DUTTA
10	ANIRBAN DUTTA
11	RAKESH MANDAL
12	RANIT MAHATO
13	SUBHAJIT TANTUBAY
14	PUSPENDU MAHATA

Khatra Adibasi Mahavidyalaya Estd.-1979 Khatra, Bankura

This project work/field work has been evaluated and found to meet the requirements and standards set by the Department of Education.

We commend the following students for their hard work, dedication, and commitment to excellence.

01.03.23.
Supervisor's Signature:
Head
Department of Geography
Khatra Adibasi Mahavidyalaya

Department of Geography EXAMINED Khatra Adibasi Mahavidyalaya

Principal's Signature:
Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF GEOGRAPHY

(PROJECT WORK 2022-23)

REMOTE SENSING

PAPERCODE: SP/GEO/504/SEC-3

Submitted by

The 5th Semester Students

[07.08.2022 to 08.09.2022]

UNDER THE GUIDANCE OF

- SRI BHANU KUMAR MANDAL
- DR. KOUSHIK MANDAL
- SRI JAYANTA KARMAKAR

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct **Project Work on Remote Sensing under Geography Course, Course code: SP/GEO/504/SEC-3**

Khatra Adibasi Mahavidyalaya Estd.-1979 Khatra, Bankura

Respected Sir/Madam,

I am writing to seek your kind support to conduct a project work as an outcome of a semester-long course titled: **"REMOTE SENSING"** as a part of **Geography Course, Course code: SP/GEO/504/SEC-3,** associated with project/field study for 5th semester students. The course outcome is mentioned in the curriculum: The project work **"REMOTE SENSING"** has been settled from departmental meeting and will be better to be scheduled on and from 07.08.2022 To 08.09.2022 The department has selected **Birbhum, 24-Parganas** (the districts of West Bengal) as the source of data for the present project works, These activities are crucial for the practical understanding and application of the theoretical knowledge gained by the students during their studies.

I assure you that I will adhere to all the guidelines and regulations of the college during this project/field work. I will also ensure that this work will not disrupt other regular activities of the college or the place involved.

I kindly request you to grant me the necessary permission to undertake this field work. I am confident that this experience will significantly contribute to the academic and professional growth of the students.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

* Bhanu Kumar Mandal.
* Dr. Koushik Mandal
* Jayanta Karmakar

[Shri. Bhanu Kumar Mandal, Dr Koushik Mandal, Shri Jayanata Karmakar]
Faculty Team, Department of Geography
Khatra Adibasi Mahavidyalaya

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

for 29.07.22
Departmental seal
Head
Department of Geography
Khatra Adibasi Mahavidyalaya

Department of Geography Khatra Adibasi Mahavidyalaya EXAMINED

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF GEOGRAPHY

(PROJECT WORK 2022-23)

REMOTE SENSING

PAPERCODE: SP/GEO/504/SEC-3

Submitted by

PABITRA TUDU

UNDER THE GUIDANCE OF

- SRI BHANU KUMAR MANDAL
- DR. KOUSHIK MANDAL
- SRI JAYANTA KARMAKAR

Aim and Objectives: Field Work on Remote Sensing

Course: Geography

Course Title: Remote Sensing (Project Work)

Course Code: SP/GEO/504/SEC-3

Submitted by

PABITRA TUDU

Department of Geography, Khatra Adibasi Mahavidyalaya

Introduction

Remote sensing is a powerful tool in geographical studies, offering an efficient method for collecting data about the Earth's surface without direct contact. This field work aims to provide students with practical knowledge and experience in remote sensing, enhancing their understanding of various concepts, techniques, and applications within this field.

Aim

The primary aim of this field work is to equip students with hands-on experience and theoretical understanding of remote sensing techniques. Students will learn to utilize remote sensing technology to gather, analyze, and interpret data related to geographical features and phenomena.

Objectives

1. **Understanding Remote Sensing:**
    - To define and understand the concept of remote sensing.
    - To comprehend the basic principles and the historical development of remote sensing technologies.
2. **Basic Concepts of Remote Sensing:**
    - To grasp the fundamental principles of remote sensing, including the concepts of energy, electromagnetic spectrum, and spectral signatures.
    - To understand how sensors detect and record information from various sources.
3. **Types of Remote Sensing:**
    - To differentiate between active and passive remote sensing.
    - To understand the applications and limitations of different types of remote sensing.
4. **Different Platforms for Remote Sensing:**
    - To learn about various platforms used for remote sensing, including ground-based, aerial, and satellite platforms.
    - To understand the advantages and disadvantages of each platform type.

5. **Geo-Stationary and Synchronous Satellites:**
    - To study the characteristics and uses of geostationary satellites.
    - To understand the role of synchronous satellites in remote sensing and their applications.
6. **Electromagnetic Radiation in Remote Sensing:**
    - To comprehend the interaction of electromagnetic radiation with the Earth's surface and atmosphere.
    - To understand how different wavelengths are used in remote sensing to detect various features.
7. **Method of Remote Sensing:**
    - To learn the steps involved in remote sensing, from data acquisition to data processing and interpretation.
    - To understand the techniques used in processing remote sensing data, including image enhancement and classification.
8. **Basic Concept of Energy Source:**
    - To understand the sources of energy used in remote sensing, including natural and artificial sources.
    - To study the principles of energy interaction with the Earth's surface features.
9. **Data Products in Remote Sensing:**
    - To identify different types of remote sensing data products, such as images, maps, and digital elevation models.
    - To understand the applications of various data products in geographical studies.
10. **Sensing Systems:**
    - To study different types of sensors used in remote sensing, including optical, thermal, and radar sensors.
    - To understand the principles behind the functioning of these sensors.
11. **Interactions with Atmosphere:**
    - To comprehend how the atmosphere affects remote sensing data.
    - To study the techniques used to correct atmospheric distortions in remote sensing images.
12. **Principles of Preparing Standard False Colour Composite:**
    - To understand the concept and applications of false colour composites in remote sensing.
    - To learn the principles and techniques for preparing standard false colour composites from remote sensing data.

Definition of Remote Sensing

Remote sensing is the science of obtaining information about objects or areas from a distance, typically from aircraft or satellites. It involves the detection and measurement of radiation reflected or emitted by objects to capture information about their characteristics and dynamics.

Basic Concept of Remote Sensing

Remote sensing relies on the interaction of electromagnetic radiation with objects. When radiation hits an object, it can be absorbed, transmitted, or reflected. Sensors capture this reflected or emitted radiation to gather information about the object. The process involves several steps:

1. **Energy Source:** The initial energy source, usually the sun, emits electromagnetic radiation that illuminates the Earth's surface.
2. **Radiation and Atmosphere:** The radiation travels through the atmosphere, which can modify its characteristics.
3. **Interaction with Target:** The radiation interacts with the Earth's surface and is absorbed, transmitted, or reflected.
4. **Recording of Energy:** Sensors detect and record the reflected or emitted energy.
5. **Transmission, Reception, and Processing:** The recorded data is transmitted to receiving stations, where it is processed into usable formats.
6. **Interpretation and Analysis:** Analysts interpret and analyze the processed data to extract meaningful information.

Types of Remote Sensing

1. **Passive Remote Sensing:** Utilizes natural sources of radiation, like sunlight, to detect energy that is naturally emitted or reflected by objects. Examples include optical and thermal infrared sensing.
2. **Active Remote Sensing:** Involves the use of artificial sources of radiation, such as radar, to emit energy towards the target and measure the reflected energy. Examples include LiDAR and synthetic aperture radar (SAR).

Different Platforms

1. **Ground-Based Platforms:** Include stationary or mobile sensors placed on the Earth's surface, providing detailed local data.
2. **Aerial Platforms:** Include sensors mounted on aircraft or drones, offering high-resolution data over larger areas.
3. **Satellite Platforms:** Include sensors on satellites orbiting the Earth, providing global coverage and long-term data sets.

Geo-Stationary Satellites

Geo-stationary satellites orbit the Earth at a fixed position relative to the Earth's surface, allowing continuous observation of a specific area. These satellites are crucial for weather monitoring, telecommunications, and environmental monitoring.

Synchronous Satellites

Synchronous satellites orbit the Earth at a speed matching the Earth's rotation, maintaining a consistent position relative to the Earth's surface. They are used for applications requiring regular observations of the same area, such as environmental monitoring and disaster management.

Electromagnetic Radiation in Remote Sensing

Electromagnetic radiation includes a range of wavelengths, from gamma rays to radio waves. Remote sensing typically uses visible light, infrared, and microwave wavelengths. Different wavelengths interact with the Earth's surface in unique ways, providing varied information about surface features.

Method of Remote Sensing

1. **Data Acquisition:** Collecting data through sensors on various platforms.
2. **Preprocessing:** Correcting and calibrating the raw data to remove distortions and enhance quality.
3. **Image Enhancement:** Improving the visual appearance of the data for better interpretation.
4. **Image Classification:** Categorizing the data into different classes based on spectral signatures.
5. **Data Analysis:** Interpreting the processed data to extract meaningful information.
6. **Validation:** Verifying the accuracy of the data and analysis through ground truthing and other methods.

Basic Concept of Energy Source

Energy sources for remote sensing include:

1. **Natural Sources:** Sunlight is the primary natural source, providing energy in the visible, infrared, and ultraviolet regions.
2. **Artificial Sources:** Radar and LiDAR systems use artificial sources to emit energy towards targets.

Data Products in Remote Sensing

1. **Images:** Visual representations of data, such as satellite images and aerial photographs.
2. **Maps:** Thematic maps showing specific features or phenomena.
3. **Digital Elevation Models (DEMs):** Representations of terrain elevation data.

Sensing Systems

1. **Optical Sensors:** Detect visible, near-infrared, and shortwave infrared radiation.
2. **Thermal Sensors:** Measure thermal infrared radiation to detect temperature variations.

3. **Radar Sensors:** Use microwave radiation to penetrate clouds and vegetation, providing data in all weather conditions.

Active Sensor Remote Sensing

Active sensor remote sensing involves the use of sensors that emit their own energy towards the Earth's surface and measure the reflected or backscattered signals. Unlike passive sensors, which rely on natural sunlight or thermal radiation, active sensors provide their own source of illumination, making them effective regardless of the time of day or weather conditions.

Key Characteristics

1. **Energy Emission and Detection:** Active sensors generate and emit energy, usually in the form of microwaves or laser pulses, towards the target. The sensor then detects the energy reflected back from the target, capturing data about the surface's characteristics.
2. **Types of Active Sensors:**
    - **Radar (Radio Detection and Ranging):** Uses microwave radiation to penetrate clouds, vegetation, and even soil, providing valuable data on surface roughness, texture, and elevation. Synthetic Aperture Radar (SAR) is a widely used radar system.
    - **LiDAR (Light Detection and Ranging):** Emits laser pulses to measure distances based on the time it takes for the pulses to return. LiDAR is particularly effective for generating high-resolution topographic maps and detailed 3D models of landscapes.

Applications

Active sensor remote sensing has diverse applications, including:

- **Meteorology:** Weather monitoring and prediction using radar.
- **Agriculture:** Monitoring crop health and soil moisture.
- **Forestry:** Mapping forest structure and biomass.
- **Geology:** Studying landforms and detecting mineral resources.
- **Urban Planning:** Creating detailed 3D models of urban environments.

By providing precise, reliable data under various conditions, active sensor remote sensing plays a crucial role in environmental monitoring, resource management, and scientific research.

Passive Sensor Remote Sensing

Passive sensor remote sensing involves the detection of natural energy that is emitted or reflected by objects on the Earth's surface. These sensors do not emit their own energy; instead, they rely on external sources, primarily the Sun, to illuminate the target area. This method is widely used due to its ability to capture data over large areas and its applicability in various environmental and earth sciences.

Key Characteristics

1. **Natural Energy Sources:** Passive sensors detect energy from natural sources, mainly solar radiation. During the day, sunlight illuminates the Earth's surface, and the reflected energy is captured by the sensors.
2. **Types of Energy Detected:**
    - **Visible Light:** Captures the same range of wavelengths visible to the human eye, useful for creating true-color images.
    - **Near-Infrared (NIR):** Useful for studying vegetation health, as healthy plants reflect more NIR radiation.
    - **Thermal Infrared:** Detects heat emitted by objects, useful for temperature mapping and studying thermal properties.
3. **Sensor Types:**
    - **Optical Sensors:** Capture visible and NIR radiation to produce images and spectral data.
    - **Thermal Infrared Sensors:** Measure thermal radiation to detect temperature variations.

Applications

Passive sensor remote sensing has a broad range of applications, including:

- **Environmental Monitoring:** Tracking changes in land cover, deforestation, and urbanization.
- **Agriculture:** Assessing crop health, estimating yields, and monitoring soil moisture.
- **Meteorology:** Observing weather patterns, cloud cover, and sea surface temperatures.
- **Oceanography:** Monitoring ocean color, chlorophyll concentrations, and sea surface temperatures.
- **Disaster Management:** Assessing damage from natural disasters like floods, wildfires, and hurricanes.

Advantages and Limitations

Advantages:

- **Wide Coverage:** Passive sensors can cover large areas, providing extensive datasets for analysis.
- **Natural Illumination:** They utilize natural sunlight, which is readily available during the daytime.

Limitations:

- **Dependency on Daylight:** Passive sensors cannot capture data at night or during cloudy conditions when sunlight is obstructed.
- **Atmospheric Interference:** The atmosphere can scatter and absorb radiation, affecting the quality of the data.

By harnessing natural energy, passive sensor remote sensing is instrumental in various fields, contributing to our understanding of the Earth's surface and atmosphere, and aiding in environmental conservation and resource management.

Interactions with Atmosphere

The atmosphere can scatter, absorb, or reflect electromagnetic radiation, affecting the quality of remote sensing data. Techniques like atmospheric correction are used to mitigate these effects and enhance data accuracy.

True Colour Composite in Remote Sensing

A true color composite is an image created in remote sensing that closely resembles what the human eye would see if looking at the Earth's surface from above. It is constructed by combining data from three specific wavelength bands: red, green, and blue (RGB). These bands correspond to the visible portion of the electromagnetic spectrum and are mapped to their respective colors in the composite image.

Key Characteristics

1. **RGB Bands:**
    - **Red Band:** Typically covers wavelengths from about 620 to 670 nanometers.
    - **Green Band:** Usually includes wavelengths from about 520 to 600 nanometers.
    - **Blue Band:** Generally spans wavelengths from about 450 to 520 nanometers.
2. **Visual Representation:** The true color composite displays the Earth's features in colors similar to how they appear naturally. Vegetation appears green, water bodies appear blue, and bare soil and urban areas appear in shades of brown and gray.

Creation Process

1. **Data Collection:** Sensors on satellites or aircraft capture data in multiple spectral bands, including red, green, and blue.
2. **Data Processing:** The collected data for each band is processed to enhance quality, correct distortions, and calibrate the radiometric properties.
3. **Band Combination:** The processed data from the red, green, and blue bands are combined. Each band is assigned to its respective color channel (red, green, or blue) in the image processing software.
4. **Image Generation:** The combined data is visualized as a true color composite image, where the Earth's features appear in natural colors.

Applications

True color composites are widely used in various fields, including:

- **Environmental Monitoring:** Assessing vegetation health, land cover changes, and natural habitats.
- **Urban Planning:** Mapping urban areas, infrastructure development, and land use.

- **Disaster Management:** Identifying affected areas post-disasters like floods, wildfires, and storms.
- **Agriculture:** Monitoring crop health, identifying different crop types, and detecting pest infestations.
- **Forestry:** Mapping forest cover, identifying deforestation, and monitoring forest health.

Advantages and Limitations

Advantages:

- **Natural Appearance:** Provides an intuitive and easily interpretable view of the Earth's surface.
- **Public Communication:** Useful for presentations, reports, and educational purposes as it closely resembles natural views.

Limitations:

- **Limited Spectral Information:** Only includes visible bands, missing information from other parts of the spectrum (e.g., infrared) that can reveal additional details.
- **Atmospheric Disturbances:** Can be affected by atmospheric conditions like haze, clouds, and shadows, which may obscure the view.

False Colour Composite (FCC) in Remote Sensing

A False Colour Composite (FCC) is a technique in remote sensing where the colors in an image are altered to highlight specific features that are not readily visible in true color images. This is achieved by assigning different spectral bands to the red, green, and blue channels in ways that differ from their natural associations. FCCs are invaluable for enhancing the visibility of certain features and aiding in the interpretation of satellite or aerial imagery.

Key Characteristics

1. **Band Assignment:** In FCCs, non-visible bands (like near-infrared) are often mapped to visible colors. For instance:
    - **Near-Infrared (NIR):** Often assigned to the red channel.
    - **Red Band:** Assigned to the green channel.
    - **Green Band:** Assigned to the blue channel.
2. **Enhanced Visualization:** By altering the band assignments, FCCs enhance the visibility of features such as vegetation, water bodies, and urban areas, which may not be as distinguishable in true color images.

Creation Process

1. **Data Collection:** Sensors capture data across multiple spectral bands, including visible and non-visible wavelengths.
2. **Data Processing:** The captured data is processed to correct for distortions and enhance quality. Radiometric and atmospheric corrections are applied to ensure accuracy.

3. **Band Combination:** Specific bands are selected and assigned to the red, green, and blue channels in the image processing software. For example:
    - NIR data to the red channel.
    - Red data to the green channel.
    - Green data to the blue channel.
4. **Image Generation:** The combined data is visualized, producing an FCC image where features are displayed in colors different from their natural appearance.

Applications

FCCs are widely used in various fields due to their ability to highlight specific features, including:

- **Vegetation Analysis:** Healthy vegetation reflects more NIR and appears red in FCCs, making it easy to distinguish from other land covers.
- **Water Body Identification:** Water bodies absorb NIR and reflect blue and green light, appearing in dark tones, which helps in mapping and monitoring water resources.
- **Urban and Land Use Mapping:** Built-up areas and bare soils reflect visible light differently from vegetation, making them easily identifiable in FCCs.
- **Geological Studies:** Different minerals and soil types can be distinguished based on their spectral signatures, aiding in geological mapping and exploration.
- **Disaster Management:** FCCs help in assessing damage from natural disasters like floods, wildfires, and hurricanes by highlighting affected areas.

Advantages and Limitations

Advantages:

- **Enhanced Feature Visibility:** FCCs make it easier to distinguish between different types of land cover and surface features.
- **Versatile Applications:** Useful in a wide range of fields, from agriculture and forestry to urban planning and disaster management.

Limitations:

- **Complex Interpretation:** The colors in FCCs do not correspond to natural colors, requiring expertise to interpret correctly.
- **Potential Misrepresentation:** If not processed accurately, FCCs can misrepresent features, leading to incorrect analysis.

Example

A common FCC configuration might involve assigning the NIR band to the red channel, the red band to the green channel, and the green band to the blue channel. In such an image:

- Healthy vegetation appears red.
- Water bodies appear dark blue or black.

- Urban areas and bare soils appear in shades of cyan, purple, or white.

Aerial Photography and Satellite Imagery

Aerial Photography

Aerial photography involves capturing images of the Earth's surface from airborne platforms, such as airplanes, drones, or helicopters. These photographs provide high-resolution, detailed views of the landscape and are used for a variety of applications, including:

- **Mapping and Surveying:** Creating detailed maps and conducting land surveys.
- **Urban Planning:** Analyzing infrastructure, planning development, and monitoring urban growth.
- **Agriculture:** Assessing crop health, monitoring fields, and managing agricultural practices.
- **Environmental Monitoring:** Tracking changes in land cover, deforestation, and natural habitats.

Aerial photographs are taken using cameras that capture images in the visible spectrum, producing true color images that are easy to interpret.

Satellite Imagery

Satellite imagery is obtained from sensors mounted on satellites orbiting the Earth. These sensors capture data in multiple spectral bands, including visible, infrared, and microwave, providing diverse information about the Earth's surface. Key applications include:

- **Global Monitoring:** Observing large-scale phenomena like climate change, deforestation, and ocean currents.
- **Disaster Management:** Assessing and responding to natural disasters such as floods, hurricanes, and wildfires.
- **Resource Management:** Monitoring natural resources, including water, minerals, and forests.
- **Scientific Research:** Studying atmospheric conditions, geological formations, and ecological changes.

Satellite imagery offers the advantage of covering vast areas and providing regular, repeat observations, essential for tracking changes over time. This imagery can be processed to create true color composites, false color composites, and other specialized products to enhance specific features or phenomena.

Both aerial photography and satellite imagery are invaluable tools in remote sensing, providing complementary perspectives and capabilities for detailed and large-scale environmental analysis and decision-making.

Types of Satellites General Idea:

Natural and Artificial Satellites

Natural Satellites

Natural satellites, also known as moons, are celestial bodies that orbit a planet or other larger body. The most familiar natural satellite is Earth's Moon. Key characteristics include:

- Formation: Formed naturally through gravitational forces, typically from debris left over from the formation of the solar system or through a collision.
- Examples:
    - Earth's Moon: Affects tides, stabilizes Earth's rotation, and has significant cultural and scientific importance.
    - Other Moons: Jupiter's Ganymede, Saturn's Titan, and Neptune's Triton, each with unique geological features and atmospheres.

Artificial Satellites

Artificial satellites are human-made objects launched into orbit around Earth or other celestial bodies. They serve various purposes:

- Communication Satellites: Enable global telecommunications, television broadcasting, and internet services (e.g., Intelsat, Starlink).
- Weather Satellites: Monitor atmospheric conditions to forecast weather and track storms (e.g., GOES, Meteosat).
- Navigation Satellites: Provide global positioning system (GPS) services for navigation and timing (e.g., GPS, Galileo, GLONASS).
- Earth Observation Satellites: Collect data for environmental monitoring, land use planning, and disaster management (e.g., Landsat, Sentinel).
- Scientific Satellites: Conduct space research and study the universe (e.g., Hubble Space Telescope, Chandra X-ray Observatory).

Key Differences

- Origin: Natural satellites occur naturally, whereas artificial satellites are constructed and deployed by humans.
- Purpose: Natural satellites exist due to gravitational forces and celestial mechanics, while artificial satellites are designed for specific functions such as communication, navigation, and scientific research.
- Structure: Natural satellites are typically rocky or icy bodies, whereas artificial satellites are composed of metal and other materials designed to withstand the space environment and fulfill their intended purposes.

Types of Satellites Used in Remote Sensing

1. Geostationary Satellites:
    - Orbit at a fixed position relative to the Earth's surface, providing continuous coverage of the same area.
    - Used for weather monitoring, telecommunications, and environmental observation.

2. **Polar-Orbiting Satellites:**
    - Orbit from pole to pole, covering the entire Earth as the planet rotates beneath them.
    - Provide detailed images and data for meteorology, environmental monitoring, and Earth observation.
3. **Sun-Synchronous Satellites:**
    - Orbit in such a way that they pass over the same part of the Earth at the same local solar time.
    - Ideal for consistent lighting conditions, used in land cover mapping, agriculture, and environmental studies.

Principles of Preparing Standard False Colour Composite

False colour composites use different combinations of visible and infrared bands to highlight specific features. For example, vegetation appears red in standard false colour composites, making it easier to distinguish from other features. The process involves selecting appropriate spectral bands and combining them into a single image, enhancing the visibility of specific features.

A descriptive report (Satellite Image Interpretation, Physical part - Drainage, Relief & Vegetation, Sociocultural Aspects – Trasport and Communication Systems – Road, Railway and Water way, Settlement Pattern – Linear, Compact and Dispersed on **Birbhum district, West Bengal**)

The work has been worked out as the Project Work on Remote Sensing (Course Code: SP/GEO/504/SEC-3) which has been attached in vernacular language (Bengali) form.

P.T.O

BANKURA UNIVERSITY

B.Sc Semester - V Geography (Programme)
Examination 2022

REMOTE SENSING

GEOGRAPHY PRACTICAL NOTEBOOK

Course Code: SP/GEO/504/SEC-3 PROJECT WORK

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* Remote Sensing দূর সংবেদন কাকে বলে?

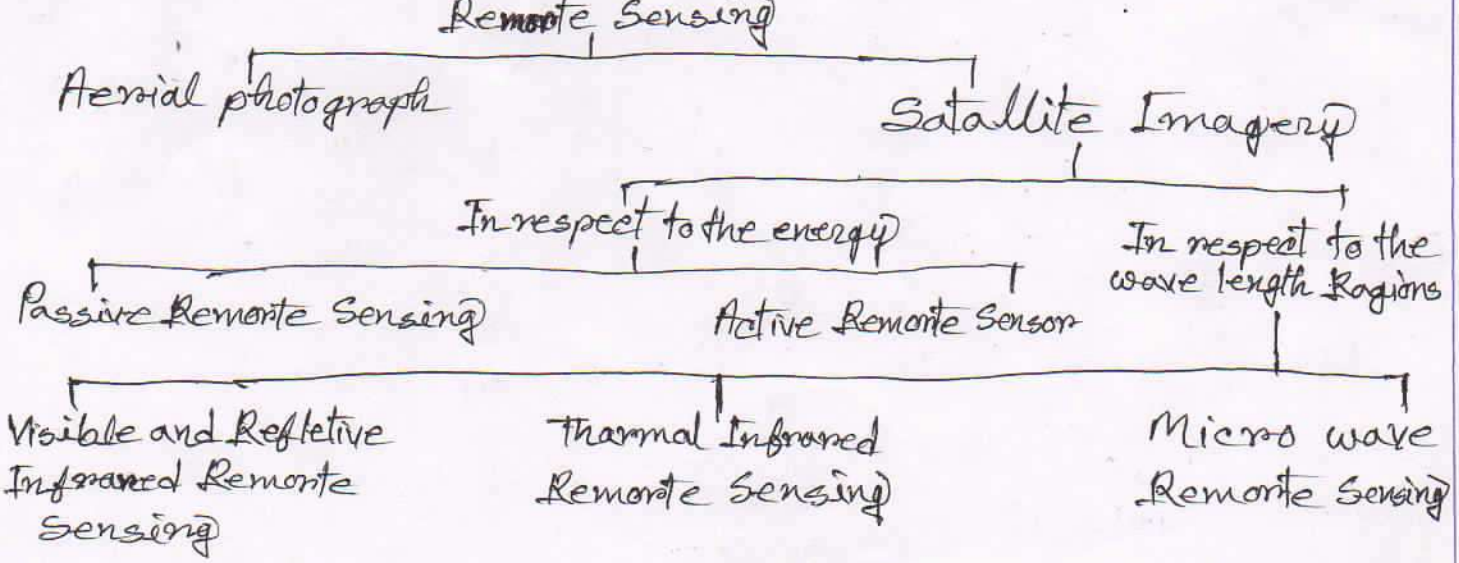
→ দূর সংবেদন হল কোনো বস্তু, ক্ষেত্র বা উপাদান কে সরাসরি দৈহিক স্পর্শ করে বা বিশ্লেষণ কোনো পদ্ধতিতে অর্থাৎ দূর থেকে সংগ্রহিত বাস্তব তথ্যের বিশ্লেষণের মাধ্যমে উক্ত বস্তু, ক্ষেত্র বা উপাদান সম্পর্কিত বিভিন্ন তথ্যাদিক সংগ্রহের বিজ্ঞান ও কলা। - সাধারণ ভাবে Remote কথার অর্থ হল। দূর। Sense অর্থ সংবেদন বা অনুভূতি। যেক্ষেত্রে বিমান বা উপগ্রহের মাধ্যমে ইলেকট্রোম্যাগনেটিক রেডিয়েশনের সাহায্যে বিভিন্ন প্রয়োজনীয় তথ্য সংগ্রহ করা হয়।

* দূর সংবেদন ব্যবস্থার ধারনা

বই পড়া অবস্থার দূর সংবেদন, বইয়ের পাতা থেকে যে আলো প্রতিফলিত হয় তাতে সাড়া দেওয়ার মাধ্যমে চোখ সংবেদন কাজ করে। পাতার কালো ও সাদা অংশ থেকে যে পরিমান আলো প্রতিফলিত হয়, তাতে চোখ যে ধরে সাড়া দেয় তাই হল সংগৃহিত তথ্য।

III দূর থেকে বা স্পর্শ না করে বাস্তব তথ্য প্রধানত তিনটি উপায়ে সংগ্রহ করা যেতে পারে যেমন - ① মাধ্যাকর্ষন শক্তির বন্টনের তারতম্য মাধ্যাকর্ষন মিটারে পরিমাপ করা হয়।
② শব্দ তরঙ্গ বন্টনের তারতম্য Sensor যন্ত্র দিয়া পড়ে।
③ Electromagnetic শক্তির বন্টনে তারতম্য মানুষের চোখে ধরা পড়ে।

Types of Remote Sensing



* দূর সংবেদন ব্যবস্থায় Platform কাকে বলে?

→ দূর সংবেদন ব্যবস্থায় Platform বলতে বোঝায়, সেই সব যান বা Vhicale যেখানে Sensor বা ক্যামেরা গুলি অবস্থান করে তথ্যগুলি সংগ্রহ করে। প্রধানত উচ্চতার উপর নির্ভর করে এই সব Platform কে বিভিন্ন এই সব Platform গুলি প্রধানত তিন ধরনের হয়ে থাকে।

- যেমন — ① Ground Borm, ② Air Borm, ③ Space Borm,

1. Ground Borm উদাহরণ - Laden truck ইত্যাদি।
2. Air Borm উদাহরণ - বেলুন, ঘুড়ি, পায়রা, চড়ো প্লেন ইত্যাদি।
3. Space Borm [redacted]: যেমন কৃত্রিম উপগ্রহ, এই কৃত্রিম উপগ্রহ গুলিকে আবার দুটি ভাগে বিভক্ত করা হয়েছে। তা নিচে আলোচনা করা হল —

[A] Geostactionary Satallite: যে সকল কৃত্রিম উপগ্রহ গুলি পৃথিবী কোনো একটি স্থানে সাথে সামঞ্জস্য রেখে পৃথিবীর আবর্তন গতির সমান সময়ে (24 ঘন্টা) পৃথিবীর চারপাশে ঘুরে চলেছে তাদের Geostationary Satallite বলে।

- এই গুলি পৃথিবী থেকে প্রায় 36000 কিলোমিটার দূরত্বে পৃথিবীর নিরক্ষীয় তলা বরাবর স্থাপন করা হয়।

উদাহরণ - INSAT, NOAA

* এই Satallite টি যোগাযোগ ব্যবস্থায় বেশি ব্যবহার করা হয়ে থাকে।

[B] Sunsynchronious Satallite: যে সকল কৃত্রিম উপগ্রহ গুলি সূর্যের আবর্তন বেগের সঙ্গে সামঞ্জস্য রেখে যে সকল কৃত্রিম উপগ্রহ উত্তর থেকে দক্ষিণে পরিক্রমন করে চলেছে তাদের Sunsynchronious Satallite বলে।

- এগুলি ভূপৃষ্ঠ থেকে 600 km থেকে 1000 km দূরত্বে স্থাপন করা হয়। এবং প্রতিটি অঞ্চলে একই স্থানীয় সময় অতিক্রম করে থাকে। বেশির ভাগ Remote Sensing উপগ্রহ গুলিকে Sunsynchronious Satallite.

* তড়িৎ চুম্বকীয় বিকিরণ বলতে কী বোঝ (EMR) ?

→ EMR কথাটির বাংলা করলে দাঁড়ায় তড়িৎ বা বিদ্যুৎ চুম্বকীয় বিকিরণ। এই দৃশ্য ও অদৃশ্য তড়িৎ চুম্বকীয় বিকিরণ প্রতিনিয়ত হয় সূর্য থেকে এবং বস্তু সমূহ থেকে সূর্যের বিকিরিত শক্তি বস্তুর উপর এসে পড়ে আর বস্তু থেকে বিকিরিত শক্তি কৃত্রিম উপগ্রহের উচ্চ ক্ষমতা সম্পন্ন ক্যামেরা গুলি সেনসারের সাহায্যে (তড়িৎ চুম্বকীয় বিকিরণ প্রক্রিয়া) চিত্র সংগৃহীত হয়।

* তড়িৎ চুম্বকীয় দৃশ্যপট বা বর্ণালি কি ?

→ একটি প্রিজমের মাধ্যমে সাদা আলো প্রবেশ করলে ওই আলো বিশিষ্ট সাতটি ভিন্ন ভিন্ন বর্ণের এবং একটি আলোর গুচ্ছ পরিণত বা পট্টি তৈরি করে তাকে বর্ণালি বলে।
তড়িৎ চুম্বকীয় বিকিরণ স্যানসারের মধ্যে প্রবেশ করে বিকিরণ ক্ষমতা অনুসারে বিভিন্ন বর্ণের ব্যান্ডে (Band) পরিণত হয়। এই উপগ্রহ চিত্রকে বর্ণ অনুসারী বিভক্ত করে তাকে তড়িৎ চুম্বকীয় দৃশ্যপট বর্ণালি বলে।

[III] তরঙ্গ দৈর্ঘ্যর উপর ভিত্তি করে ইহা বিভিন্ন রকমের হয় যেমন → 2.4 — 0.7 — দৃশ্যমান যোগ্য বর্ণালি।

* দূর সংবেদন ব্যবস্থার পদ্ধতি গুলি আলোচনা করো ?

→ দূর সংবেদন ব্যবস্থা বিভিন্ন দুটি পদ্ধতিতে সম্পন্ন হয় যথা –

(1) রাশি তথ্য আহরণ বা তথ্য সংগ্রহ :

উপগ্রহ বা বিমানে রাখা ক্যামেরার সাহায্যে ভূপৃষ্ঠের ডিজিটাল চিত্র সংগ্রহ করা হয়। নিম্নলিখিত পর্যায় গুলির মধ্যে তথ্য সংগ্রহ করা হয়।

[A] শক্তির উৎস : লক্ষ্য বস্তু চিত্র সংগ্রহের জন্য দুই ধরনের শক্তির প্রয়োজন।

ক) প্রাকৃতিক শক্তি হল সূর্যালোক দিনের বেলায় চিত্র সংগ্রহের কাজে লাগে।

খ) কৃত্রিম শক্তি : Flash এর সাহায্যে রাত্রি বেলায় চিত্র গ্রহণে কাজে লাগে।

B] বায়ুমণ্ডলের মধ্য দিয়ে শক্তির প্রবাহ :- তড়িৎ চুম্বকীয় বিকিরণ বায়ুমণ্ডলের দিয়ে চলাচলের সময় বিক্ষিপ্ত, জলীয়বাষ্প ও গ্যাসীয় উপাদান দ্বারা শোষিত হয়।

C] ভূপৃষ্ঠের পদার্থের সঙ্গে মিথস্ক্রিয়া :- বিভিন্ন বস্তুর বিকিরণ ক্ষমতা বিভিন্ন হয় বলে, প্রতিফলিত বিকিরণ ক্ষমতাও ভিন্ন হয়।

D] শক্তি প্রত্যাবর্তন :- শক্তি প্রত্যাবর্তনের প্রতিফলিত আলোক তরঙ্গ অনুসারের দৈর্ঘ্য মাত্রা ধারে।

② তথ্য বিশ্লেষণ :-

তথ্য বিশ্লেষণে ক্যামেরা স্ক্যানারে ধরা পড়ে, ডিজিটাল চিত্র কে কম্পিউটারের মাধ্যমে দিয়ে বিশ্লেষণ করা হয় এবং বর্ণকে ছদ্মবর্ণ বা ছদ্মবর্ণকে প্রকৃত বর্ণে পরিণত করা যায়। আধুনিক Remont Sensing ও Software কার্যক্রম ছাড়াও মানচিত্র, চিত্র বিশ্লেষণে শ্রেণীকরণ ও করা হয়।

SENSING SYSTEMS

* দূর সংবেদন এর Sensor কাকে বলে)

→ Sensing কথাটির অর্থ হল - কোনো বস্তুকে পর্যবেক্ষণ করা বা দেখা, সুতরাং Sensor হল একটি যন্ত্র যা মহাকাশ থেকে ভূপৃষ্ঠের কোনো নির্দিষ্ট লক্ষ্য বস্তুর তড়িৎ চুম্বকীয় বিকিরণ গ্রহণ করে তা চিহ্নিত করতে পারে। Remont Sensing এর Sensor কে দুই ভাগে ভাগ করা যায়।

① Image Forming ② Non-Imageter.

Image Forming Sensor আবার দুই ভাগে ভাগ করা যায়। - (A) Active Image Forming

(B) Passive Image Forming

Sensor এর উদাহরণ হল - Radder

- Videocam Camera
- Optical Scaneer.

[A] Active Sensor Remont Sensing -এর ক্ষেত্রে কোনো বস্তুর প্রতিচ্ছবি সংগ্রহের জন্য নিজের থেকে Energy পাঠায় এবং সংগ্রহ করে তাদের Active Sensor বলে।
এই সকল ক্ষেত্রে শক্তির উৎস গুলি মানুষ সৃষ্টির আবিষ্কৃত দেখা যায়। কোনো অন্ধকার আচ্ছন্ন স্থান থেকে প্রতিচ্ছবি গ্রহন এর সময় এই ধরনের Sensor ব্যবহার করা যায়।
Active Sensor এর উদাহরন – Radder and Ladder.

[B] Passive Sensor Remont Sensing এ যে সকল Sensor গুলি নির্দিষ্ট সময়ে অন্তরে স্বয়ংক্রিয়ভাবে কোনো লক্ষ্য বস্তুর তড়িৎ চুম্বকীয় বিকিরণ গ্রহন করে তার প্রতিচ্ছবি তৈরী হয়, তাদের কে Passive Sensor বলা হয়।
Passive Sensor এর উদাহরন – TV, Camera, Photography

* Band কাকে বলে?
→ Band তড়িৎ চুম্বকীয় বিকিরনের একটি নির্দিষ্ট অংশ যা কোনো বস্তু থেকে বিচ্ছুরিত ও প্রতিফলিত হয় Sattalite Sensor এর Device এ লিপিবদ্ধ হয় তাকে Band বলে।
উদাহরন – T.M Band, MSS Band.

* Pixel কাকে বলে?
→ চিত্রের প্রতিচ্ছবি ক্ষুদ্রতম অংশ বা উপাদানকে Pixel বলা হয়। যার নির্দিষ্ট Value, Address থাকে এই Adress দুই প্রকারের হয় - Latitude, Address, Longitude এবং Row/column এই দুই গুলি, হল একটি Pixel যা পৃষ্ঠকে Research করে।

INTERACTION WITH ATMOSPHER

বায়ুমন্ডলে আবিরত শক্তির উৎসের বিভিন্নতা দ্বারা সৃষ্ট সমস্যাগুলিকে চিহ্নিত করে, বায়ুমন্ডলে সবসময় সংবেদক দ্বারা গৃহিত শক্তি বর্ণালি বিন্যাস ও শক্তির কিছু পরিমান পরিবর্তিত করে থাকে যেখানে বায়ুমন্ডল বর্ণালিকে সীমাবদ্ধ করে এবং তরঙ্গ দৈর্ঘ্যের সময় ও স্থান অনুসারে এর প্রভাব বিভিন্ন হয়। তরঙ্গ দৈর্ঘ্য বিভিন্ন তার জন্য সংবেদকের ব্যবহার ও অনুভব মিলিত প্রয়োগের সময় বায়ুমন্ডলের প্রভাব দূর করা অত্যন্ত প্রয়োজন।

একটি এমন বায়ুমন্ডল যা কোনো ভাবে উৎসের থেকে আগত শক্তির পরিবর্তিত করে না, যদিও উৎসের থেকে যে সময় আসুক না কেন অথবা আগত গতি ভাবে একটি দৈর্ঘ্য, সময়, স্থান এবং অনুভব মিলিত সংবেদন বিস্তারিত করে না কেন।

True Colour Composite

* True Colour Composite কি? (TCC)

→ Image এ ভূমি ব্যবহার (Land use) দেখানোর জন্য আবিষ্কৃত তিনটি রঙ ব্যবহার করা হয় যথা Red, Green, Blue (RGB) এদের সংমিশ্রণ করে দেখানো হয়। তাই Three Band Satellite এর সাহায্যে যে কোন Image এর True colour Composite প্রতিস্থাপনের জন্য RGB channel ব্যবহৃত হয়। এর ফলে নীল বস্তু নীল (Blue Band) লাল বস্তু লাল ব্যান্ড (Red Band) এবং সবুজ বস্তু সবুজ ব্যান্ড (Green Band) এই রকম দেখানো হয়। এই রূপ ব্যবস্থাকে True colour Composite বলে।

	Object		Image Colour
1.	সবুজ উদ্ভিদ	1.	সবুজ রঙের
2.	নীল জল বা জলাধার	2.	নীল রঙ
3.	লোহিত মৃত্তিকা	3.	লাল রঙ

* False Colour Composite কি? (FCC)

→ Image processing এর সময় লক্ষ্য বস্তুর প্রকৃত রঙ এর পরিবর্তে ছদ্ম রঙ (False colour) ব্যবহার করা হলে তাকে False colour Composite বলে।

• FCC এর ব্যবহার করার কারণ–

1. বাস্তবে প্রকৃত রঙের মিশ্রণ বেশি জায়গায় কার্যকর নয়, কারণ বেশির ভাগ স্থানে খাদ্যোবিক উদ্ভিদ বা নীল জলরাশি বিরাজমান অথচ মানুষের চোখে সবুজ রঙ বা নীল বস্তুকে তাহকে পৃথক করতে পারে না, কারণ Green বা Blue এর Wave Length কাছাকাছি হওয়ার ফলে Image এর ক্ষেত্রে পার্থক্য এবং বুঝা করতে কঠিন হয়ে যায়।

2. প্রত্যেক দেশের নিজস্ব ভূপৃষ্ঠের প্রতিচ্ছবি গোপনীয়তা বজায় রাখার জন্য।

* Standard False Colour Composite (Standard FCC)

→ False colour ব্যবহার ক্ষেত্রে বিশ্ব ব্যাপী একটি সার্বিক নিয়ম মেনে চলা হয় বা colour Assigement গুলি খুব ভালো করে Define করা হলে তাকে Standerd FCC বলে।

Band use	Colour use
Green	Blue
Red	Green
Near Infrede	Red

Exampel of colour standared FCC Application of standared Fcc.

Object	Standared Fcc
① উদ্ভিদ বা ঘাস	① Red
② ক্ষয়প্রাপ্ত বনভূমি	② Scoured Red
③ ঘন বনভূমি	③ Deep Red
④ হলুদ বর্ণ গাছ	④ Dark Red
⑤ বসতি এলাকা	⑤ Blue
⑥ লাল বর্ণ যুক্ত বস্তু	⑥ Green
⑦ জল বা জলীয় উপাদান	⑦ Dark Blue.

* দূর সংবেদন ব্যবস্থার প্রক্রিয়া (process of Remote Sensing).

→ বিদ্যুৎ চুম্বকীয় শক্তির সাহায্যে ভূপৃষ্ঠের দূর সংবেদনের দুটি মৌলিক প্রক্রিয়া হল — ① রাশি তথ্য আহরণ (Data Collection)
② রাশি তথ্য বিশ্লেষণ (Data Analysis)

* দূর সংবেদন ব্যবস্থার প্রকার ভেদ? Tipe of Remote Sensing?

→ [A] Air Photo (Aeriel photographs) বা বিমান চিত্র সংগ্রহ,
[B] Satellite Imagery (উপগ্রহ চিত্র)

[A] **Air Photo/ Aeriel Photographs**:

এই পদ্ধতিটি হল বিমান চিত্র সংগ্রহ পদ্ধতি যেমন বিমান থেকে বা বেলুন থেকে বা উচ্চ স্থানে সংস্থাপিত ক্যামেরার সাহায্যে প্রাপ্ত বিমান চিত্র সংগ্রহ ব্যবস্থা।

[B] **Satellite Imagery**:

এই পদ্ধতিটি মহাকাশে Rocket এর সাহায্যে কৃত্রিম উপগ্রহ স্থাপিত করে তাতে বিভিন্ন Sensor সহিত Digital পদ্ধতিতে প্রাপ্ত তথ্য ভূপৃষ্ঠের নির্দিষ্ট একক কেন্দ্রগুলিতে সংরক্ষিত হয় পরে তা বিভিন্ন পদ্ধতিতে বিশ্লেষণ বা ব্যবহার করা হয়।

* উপগ্রহ চিত্র Satellite

→ (1) Passive Remote Sensing (নিষ্ক্রিয় দূরসংবেদন)
(2) Active Remote Sensing (সক্রিয় দূর সংবেদন)

* উপগ্রহ কি?

→ উপগ্রহ হল এমন একটি বস্তু যা নির্দিষ্ট কোন গ্রহের চার দিকে ঘুরতে থাকে।

* উপগ্রহের প্রকারভেদ?

→ উপগ্রহ সাধারনত দুই প্রকারের হয়।
(1) প্রাকৃতিক উপগ্রহ (Natural Satellite)
(2) কৃত্রিম উপগ্রহ (Artificial Satellite)

1. প্রাকৃতিক উপগ্রহ : চাঁদ হচ্ছে পৃথিবীর একমাত্র প্রাকৃতিক উপগ্রহ।

2. কৃত্রিম উপগ্রহ : Indian Remort Sensing Satellite (IRS) INSAT Satellite (ভারতের কৃত্রিম উপগ্রহ)

* দূর সংবেদনের ব্যবস্থা সুবিধা ও অসুবিধা গুলি লেখ?

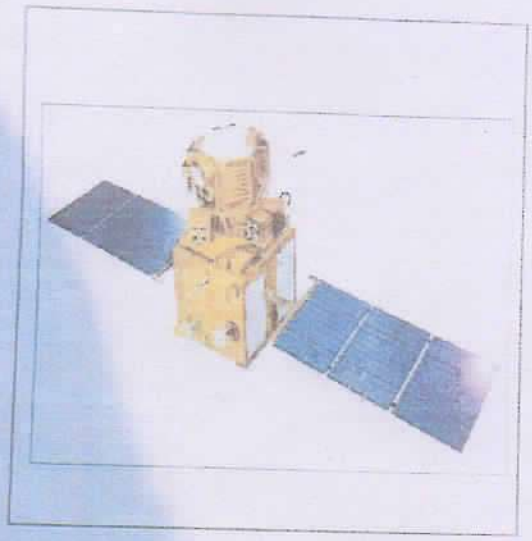
→ সুবিধা: (1) উচ্চ স্থান থেকে পৃথিবী পৃষ্ঠের ছবি তোলা হয় বলে একসঙ্গে অনেক বড় এলাকা দেখানো সম্ভব হয়।
(2) বিভিন্ন তরঙ্গ দৈর্ঘ্য অনুসারী বিভাজিত শক্তি বা Sensor ধরা পড়ে বলে True colour & False colour, Black and White বিভিন্ন ধরনের Photo পাওয়া যায়।
(3) উপগ্রহ চিত্র গুলি উপগ্রহের নির্দিষ্ট Memory তে স্থায়ীভাবে সঞ্চিত হয়। ভবিষ্যতে যে কোনো তথ্য পাওয়া যায় যা নষ্ট হওয়া সম্ভবনা নেই।
(4) বর্তমানে Computer সহ বিভিন্ন প্রযুক্তি ব্যবহারে সুবিধা পাবার জন্যে মানচিত্রে অঙ্কন করা অত্যন্ত সহজ হয়ে দাঁড়ায়।
(5) আবহাওয়ার পূর্বাভাস, বিমানের গতিপথ পরিবর্তন সহ প্রযুক্তি সম্বন্ধিত বিষয় খুব সহজে দেওয়া সম্ভব হয়।

অসুবিধা: (1) সহজ কাজে উপগ্রহ প্রেরন, স্থাপন ও অন্যান্য প্রযুক্তি গত কাঠামো তৈরির জন্য প্রচুর অর্থের প্রয়োজন বা উন্নয়ন দেশের থেকে অসুবিধা জনক।

SOME INDIAN REMOTE SENSING SATELLITES

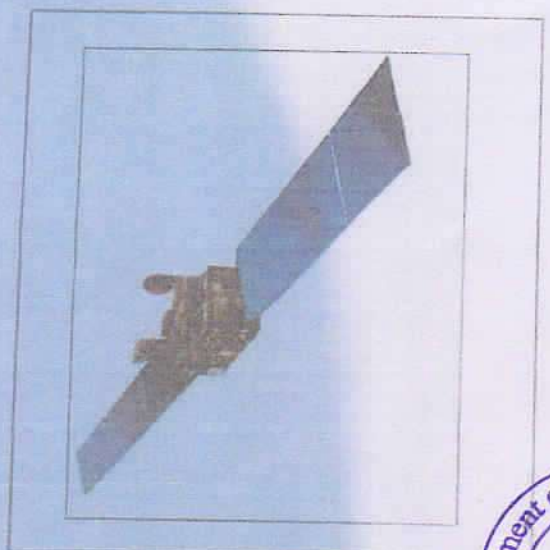
RESOURCESAT-1

IRS 1A

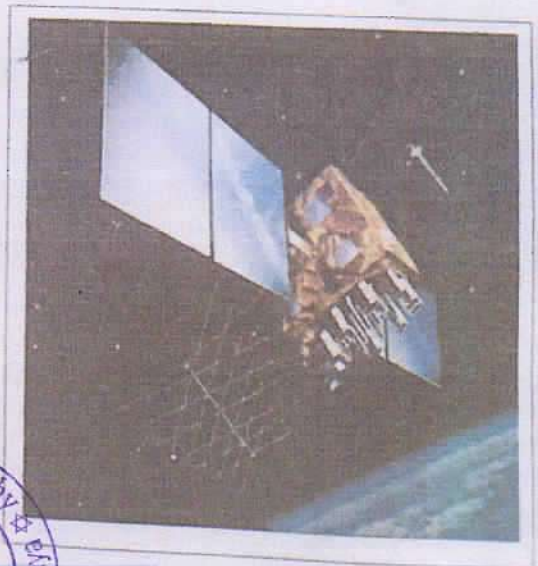


IRS P6.

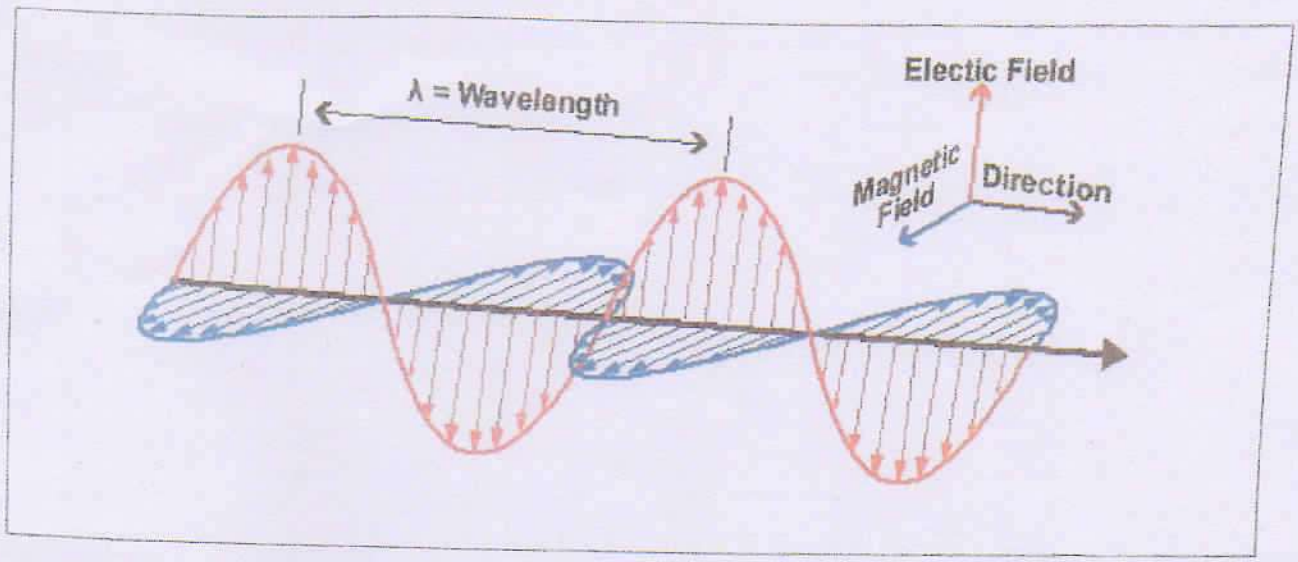
Cartosat 1



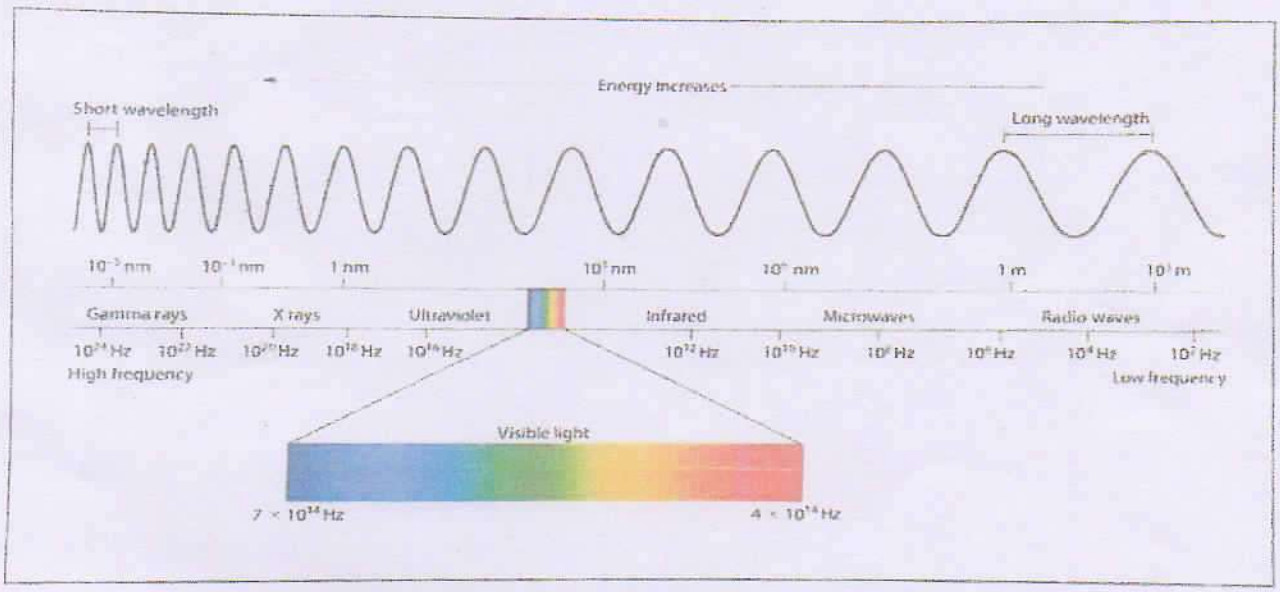
Oceansat 1.



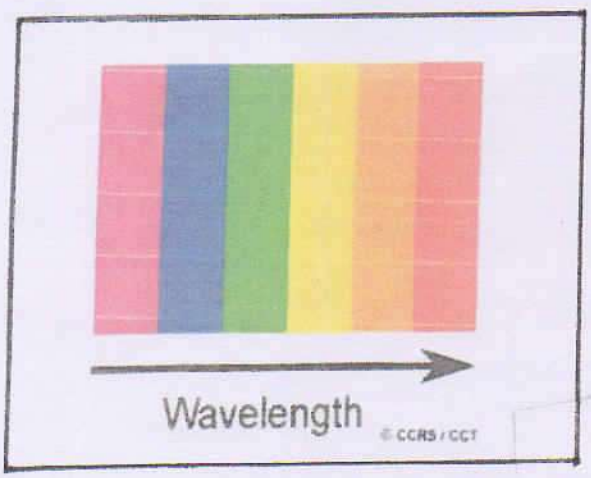
IRS-1D



ELECTRO-MAGNETIC WAVE



ELECTRO-MAGNETIC SPECTRUM



Wavelength

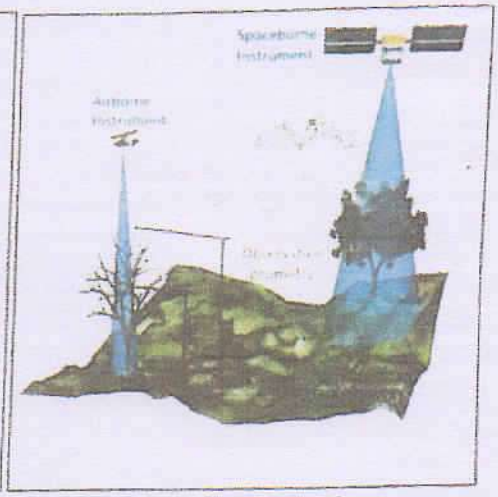
© CCRS / CCT

Violet: 0.4 - 0.446 µm
Blue: 0.446 - 0.500 µm
Green: 0.500 - 0.578 µm
Yellow: 0.578 - 0.592 µm
Orange: 0.592 - 0.620 µm
Red: 0.620 - 0.7 µm

THREE PLATFORMS OF REMOTE SENSING SYSTEM

1: Ground-Based Platform.

2: Airborne Platform.



3: Space-Based Platform

Tow Type of Satellite:

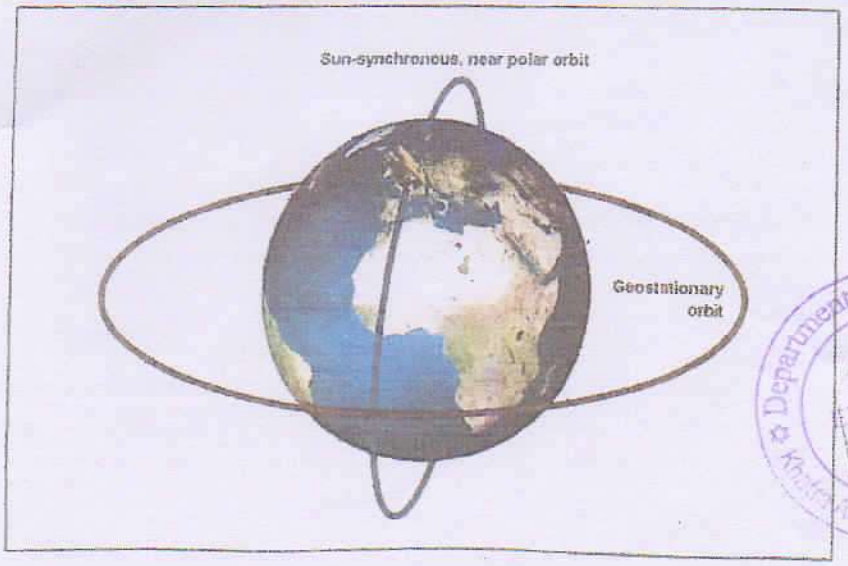
Geostationary satellites are launched into orbit in the same direction the Earth is spinning. When the satellite is in orbit at a specific altitude, it will exactly match the rotation of the Earth. This sweet spot is approximately 36,000 km above the Earth's surface in high Earth orbit.

Weather, communication and global positioning satellites are often in a geostationary orbit. Because the satellite follows the Earth's rotation always at the same point, an observer on Earth would be able to continuously "see" it. In the case of geostationary satellites, the Earth's force of gravity is exactly enough to provide acceleration required for circular motion.

Example: INSAT, GOES.

geosynchronous satellites can have any inclination, the key difference to geostationary orbit is the fact that they lie on the same plane as the equator. Geostationary orbits fall in the same category as geosynchronous orbits, but with that one special quality of being parked over the equator.

Example: IRS, SPOT, LANDSAT.



EXAMPLE OF RESOLUTION

1. Spectral Resolution

Sensor	Width
MSS-Band-1	0.5-0.6 um
TM-Band-2	0.52-0.60 um

2. Spatial Resolution

Satellites	Sensor	Spatial Resolution (meter)
IRS-1A & 1B	LISS-I	72.5
IRS-1A & 1B	LISS-II	36.25
IRS-1C	LISS-III	23.5
IRS-1C	PAN	5.8
SPOT	PAN	10
LANDSAT-4,5	TM	30
LANDSAT-1,2,3	MSS	79

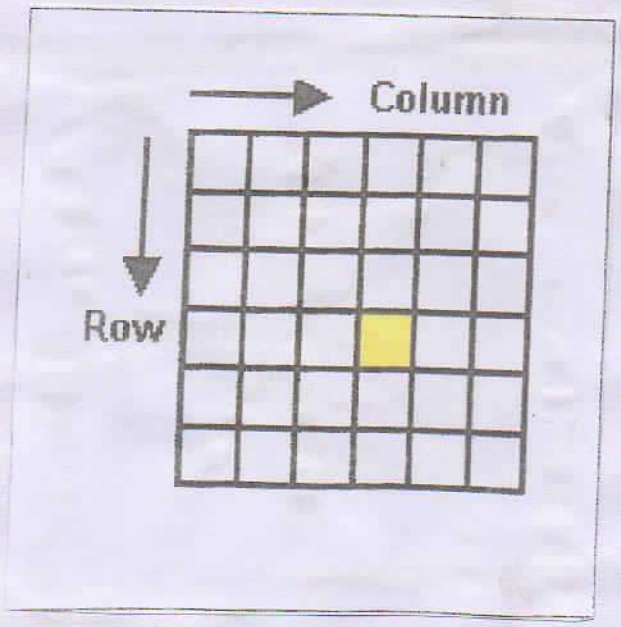
3. Radiometric Resolution

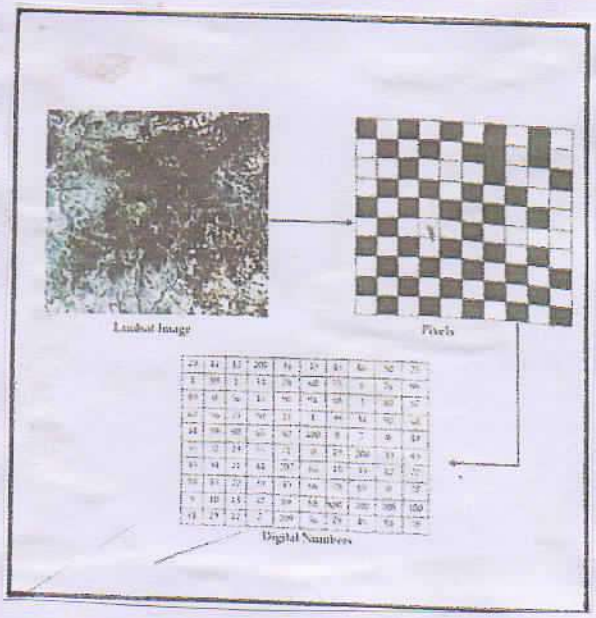
Satellites	Sensor	Radiometric Resolution (bit)
LANDSAT-1,2,3	MSS	6
LANDSAT-4,5	MSS & TM	8
NOAA	AVHRR	10

4. Temporal Resolution

Satellites	Temporal Resolution (Days)
LANDSAT-4,5	16
LANDSAT-1,2,3	18
IRS-1A, 1B	18
IRS-1C, 1D	24

Pixels





(2) আবহিক গোলযোগ, মেঘ আচ্ছন্নতা, বৃষ্টিপাত ঝড় ইত্যাদি কারণে উপগ্রহ চিত্র ভালোভাবে তোলা যায় না বা ব্যাঘাত ঘটে থাকে।

(3) উপগ্রহের গুনমান বা Sensor গুনমান ভালো না হলে ভূ-পৃষ্ঠের ছোটো ছোটো বিষয়গুলি বিবরন করতে সক্ষম হয় না।

জলনির্গম প্রনালী Drainage

প্রদত্ত উপগ্রহ চিত্রের মানচিত্রের নাম্বার 73 $\frac{M}{1}$ (C3) যেটি পশ্চিম বঙ্গের অন্তর্ভুক্ত বীরভূম জেলার অন্তর্গত। যার অক্ষাংশের বিস্তার হল - 23°45'N → 23°50'N এবং দ্রাঘিমাংশের বিস্তার হল - 87°10'E → 87°15'N, R.F 1:50000 ও সমোন্নতি রেখার বিস্তার হল 20 মিটার। উপগ্রহ চিত্রের ভারতীয় উপগ্রহ (IRS) দ্বারা 2018 সালে তোলা হয়েছে।

নদনদী ও জলনির্গম প্রনালীর বিন্যাস :

প্রদত্ত উপগ্রহ চিত্রচিত্রটি সামগ্রিক পর্যালোচনার মাধ্যমে যে সমস্ত নদ নদী গুলি ও জলাশয়ের বৈশিষ্ট্য পরিলক্ষিত হচ্ছে সেটি হল নিম্নরূপ।

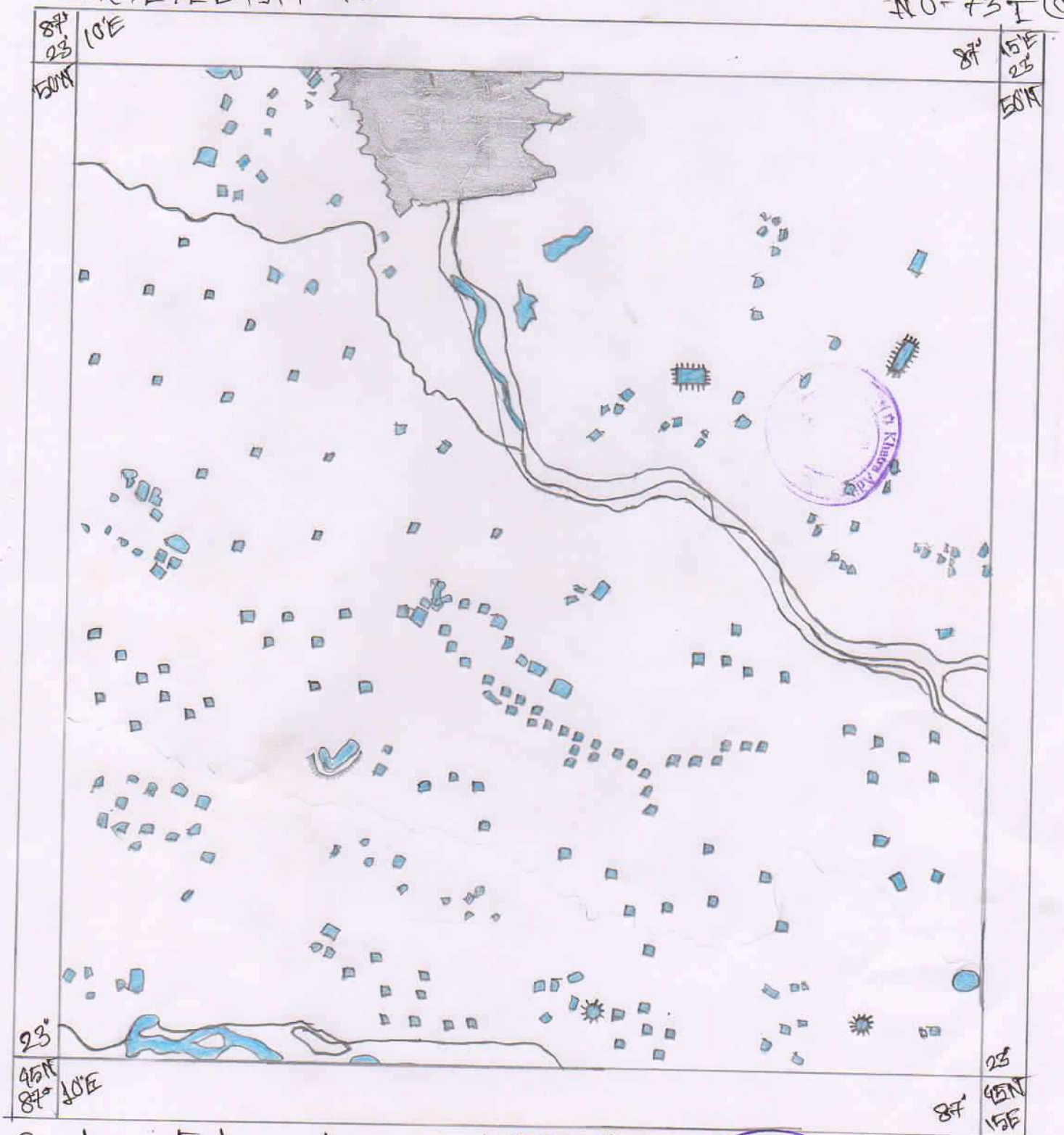
i) নদনদী : প্রদত্ত উপগ্রহ চিত্রের উত্তর পশ্চিম থেকে দক্ষিন পূর্ব দিকে একটি নদী প্রবাহিত হচ্ছে যার নাম হল হিংলা নদী, একটি অনিত্যবাহী ও বর্ষার জলে পুষ্ট নদী। নদীটি সামগ্রিক গতিপথে বালুচর লক্ষ্য করা যাচ্ছে যা উপগ্রহ চিত্রে সাদা রঙে দেখানো হয়েছে। অনেকগুলি উপনদী ও শাখা নদী এই নদীর সাথে লক্ষ্য করা যাচ্ছে বর্ষাকালে এই নদীকে কেন্দ্র করে নৌচলাচল ব্যবস্থা গড়ে উঠেছে।

অন্যদিকে উপগ্রহচিত্রের দক্ষিন দিকে, অন্য একটি প্রধান নদী প্রবাহিত হচ্ছে পশ্চিম থেকে পূর্ব দিকে। যেটিও বর্ষাতে জলে পুষ্ট নদী এই অনিত্যবাহী নদীটি এই নদীটি অত্যাধিক বালুচর লক্ষ্য করা যায়। নদীটিতে শাখানদী ও উপনদীও লক্ষ্য করা যাচ্ছে। এছাড়াও উপগ্রহ চিত্রে দুটি অনিত্যবাহী ছোটো নদী লক্ষ্য করা যাচ্ছে। যারা একটি হিংলা নদী চানদিক উত্তর পশ্চিমের দিকে থেকে দক্ষিন পূর্ব দিকে প্রবাহিত হয়ে হিংলা নদীর সাথে মিলিত হয়েছে। অন্যদিকে অপর দিকে একটি অনিত্যবাহী ছোট নদী উপগ্রহ চিত্রের দক্ষিন

WEST BENGAL
BIRBHUM DIST

SURVEYED 1971-72

NO-73 M I (C3)



Contour Interval
20 Metres

1:50000

Published
1974

দিকে উত্তর পশ্চিম দিকের থেকে দক্ষিণ পূর্ব দিকে প্রবাহিত হচ্ছে।

ii) হ্রদ ও জলাশয়: প্রদত্ত ভূপ্রকৃতি চিত্রের উপরিভাগ থেকে হুজলা নদীর বন্যা নিয়ন্ত্রনের জন্য একটি বৃহৎ জলাধার নির্মান করা হয়েছে। সার্ভেপ্লেন চিত্রের কালো বৃত্তের মাধ্যমে দেখানো হয়েছে। এ ছাড়াও মানচিত্রের অনেকগুলি বিভিন্ন আয়তাকার হ্রদ ছোট ও বড় জলাশয় ছড়িয়ে ছিটিয়ে অবস্থান করছে। কালো বৃত্তের মাধ্যমে দেখানো হয়েছে।

স্বাভাবিক ভৌত

প্রদত্ত ভূপ্রকৃতি চিত্রের মানচিত্র নম্বর ~~73~~ $\frac{M}{1}$ (C3) যেটি পশ্চিমবঙ্গের অন্তর্ভুক্ত বীরভূম জেলার অর্ন্তগত। যার অক্ষাংশগত বিস্তার হল 23°45'N → 23°50'N এবং দ্রাঘিমাংশগত বিস্তার হল- 87°10' E → 87°15'E, R:F, 1:50000 ও সমোন্নতি রেখার বিস্তার হল 20' মিটার। ভূপ্রকৃতি চিত্রটির কার্টোগ্রাফি ভূপ্রকৃতি (TRS) দ্বারা তোলা হয়েছে, 2018 সালে।

■ প্রদত্ত ভৌত ভূপ্রকৃতি চিত্রে দুই ধরণের ভৌতিক লক্ষ্য করা যায়।

(1) স্বাভাবিক ভৌতিক: ভূপ্রকৃতি চিত্রের উত্তর দিকে ঘন অরণ্য লক্ষ্য করা যায় যেগুলি লাল বর্ণের মাধ্যমে দেখানো হয়েছে। এছাড়া বিভিন্ন উত্তর-পূর্ব দিকে আরো কিছু সরু অরণ্য লক্ষ্য করা যায়।

(2) বন সূচক: স্বাভাবিক ভৌতিক ছাড়াও ভূপ্রকৃতি চিত্রের মধ্যে মানুষের দ্বারা মূল বনসূচক লক্ষ্য করা যায়। মূলত দুটি প্রধান নদীর ও দুটি আদিবাসীর নদীর দুই তীরে বেশ ঘন বনসূচক লক্ষ্য করা যাচ্ছে যেগুলি ভূপ্রকৃতি চিত্রের লাল বর্ণের মাধ্যমে দেখানো হয়েছে। এছাড়াও মানচিত্রে অবশ্য ছড়িয়ে ছিটিয়ে ক্ষুদ্র ক্ষুদ্র বনসূচক লক্ষ্য করা যাচ্ছে।

যোগাযোগ ব্যবস্থা ও জনবসতি

প্রদত্ত মানচিত্রের মানচিত্র নম্বর ~~73~~ $\frac{M}{1}$ (C3) যেটি পশ্চিমবঙ্গের অন্তর্ভুক্ত বীরভূম জেলার অর্ন্তগত। যার অক্ষাংশগত বিস্তার হল- 23°45'N → 23°50'N এবং দ্রাঘিমাংশের বিস্তার হল- 87°10'E → 87°15'E, R:F, 1:50000 ও সমোন্নতি রেখার

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বিস্তার হল 20' মিনিট। উপগ্রহ চিত্রটির ভারতীয় উপগ্রহ (IRS) দ্বারা তোলা হয়েছে, 2018 সালে।

এই উপগ্রহ চিত্রে সর্বাধিক যোগাযোগ ব্যবস্থা খুবই ভালো লক্ষ্য করা যাচ্ছে।

- যোগাযোগ ব্যবস্থাটি তিনটি মাধ্যমে লক্ষ্য করা যাচ্ছে।

রেলপথ — একটি মানচিত্রে উত্তর পশ্চিম দিকে থেকে দক্ষিণ দিকে বিস্তৃত হয়েছে যেটি উপগ্রহ চিত্রের সাদাটে বর্ণের মাধ্যমে দেখানো হয়েছে।

সড়কপথ — প্রদত্ত যোগাযোগ ব্যবস্থার অন্যতম মাধ্যম হল সড়কপথ উপগ্রহ চিত্রে লক্ষ্য করা যায়। তাদের মধ্যে উল্লেখযোগ্য সড়ক পথগুলি রেলপথ, তাদের বৈশিষ্ট্য কালো বর্ণের মাধ্যমে সড়কপথগুলি লক্ষ্য করা যাচ্ছে প্রদত্ত উপগ্রহ চিত্রের উত্তর দিকে প্রবাহিত নদীর তারদিকে এই ধরনের সড়কপথ লক্ষ্য করা যাচ্ছে। সামগ্রিক ভাবে উপগ্রহ চিত্রের দক্ষিণ পশ্চিম ও দক্ষিণ পূর্ব অংশে ও উত্তর পশ্চিম অংশে সড়কপথ ও রেলপথ যোগাযোগ ব্যবস্থা খুবই উন্নত মানের।

নদীপথ — প্রদত্ত উপগ্রহ চিত্রের দুই প্রধান নদী ও দুটি ছোট নদী উত্তর পশ্চিম দিকের থেকে দক্ষিণ পূর্ব দিকে প্রবাহিত হয়েছে ও নদীগুলি বর্ষার জলে পুষ্ট অনিত্যবহ নদী তাই বর্ষাকালে নৌচলাচলের মাধ্যমে যোগাযোগ ব্যবস্থা গড়ে উঠেছে। বিশেষ করে উপগ্রহ চিত্রের উত্তর পূর্ব দিকের অংশগুলিতে কুঁইলা নদীকে কেন্দ্র করে এই ধরনের যোগাযোগ ব্যবস্থা গড়ে উঠেছে।

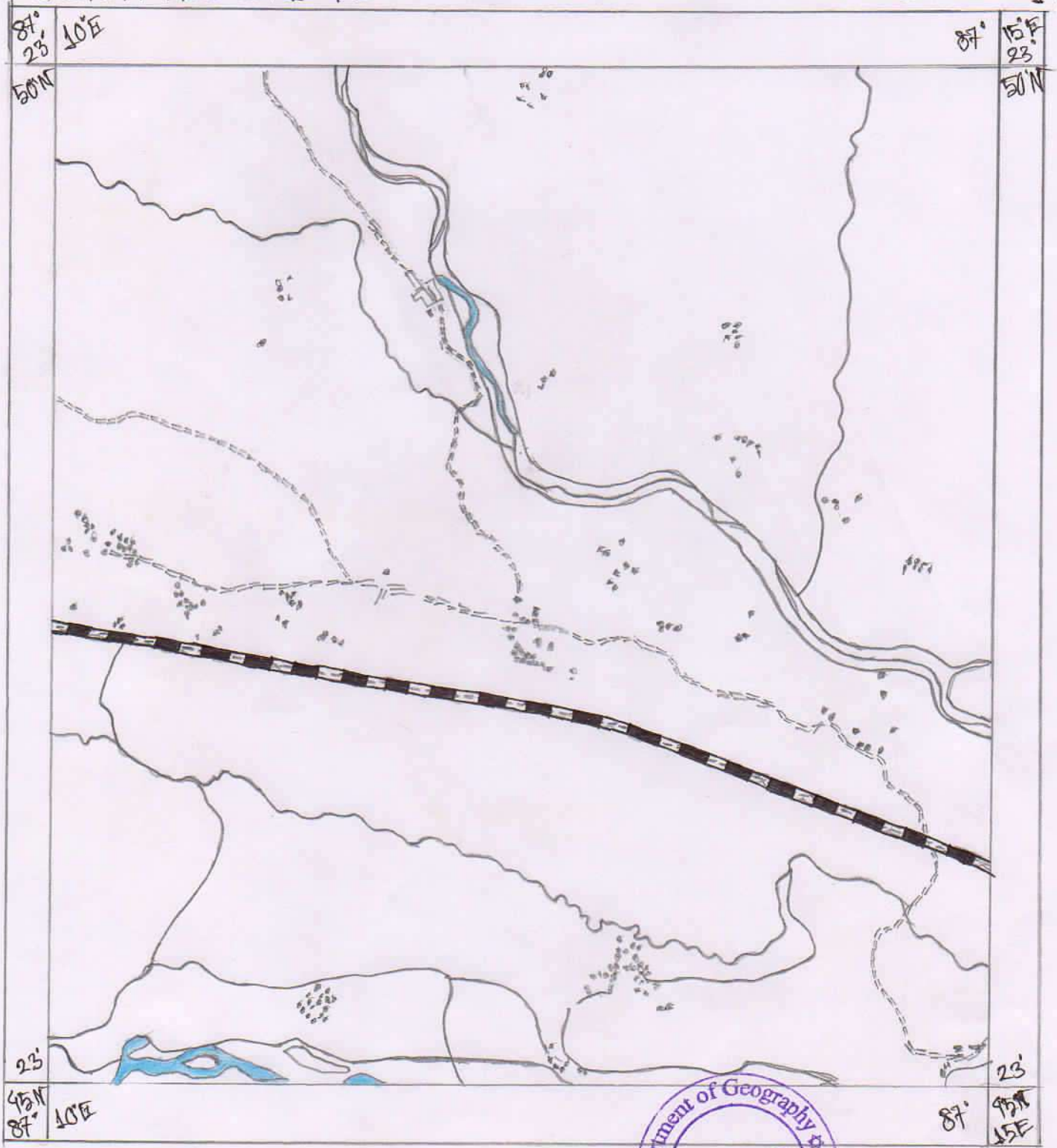
জনবসতি

প্রদত্ত উপগ্রহ চিত্রের মানচিত্র নম্বর 73 $\frac{M}{1}$ (C3) যেটি পশ্চিমবঙ্গের অন্তর্ভুক্ত বীরভূম জেলার অন্তর্গত যার অক্ষাংশের গত বিস্তার হল — 23°45'N → 23°50'N এবং দ্রাঘিমাংশের গত বিস্তার হল — 87°10'E → 87°15'E, R.F 1:50000 ও সমোন্নতি রেখার বিস্তার হল 20 ~~মিটার~~ মিটার।

WEST BENGAL
BIRBHUM DIST

SURVEYED 1071-72

NO-73 M/1 (C3)



Contour Interval 20 Metres 1:50000 Published 1974

উপগ্রহ চিত্রের ছবিটি ভারতীয় উপগ্রহ (IRS) দ্বারা 2018 সালে তোলা হয়েছে।

- এই উপগ্রহ চিত্রে আঞ্চলিক জনবসতি বিশ্লেষণ তিন ধরনের জনবসতি লক্ষ্য করা যাচ্ছে।

রৈখিক বসতি - মূলত রেল লাইন ও সড়ক পথের দুই পাশ বরাবর রৈখিক জনবসতি সাধারণত লক্ষ্য করা যাচ্ছে।

গোষ্ঠিবদ্ধ জনবসতি

উপগ্রহ চিত্রের সড়ক পথের সংগম হয়েছে গোষ্ঠিবদ্ধ লক্ষ্য করা যাচ্ছে। বিশেষত চিত্রের রেল পথের বাঁদিকে এই ধরনের জনবসতি লক্ষ্য করা যাচ্ছে। এই গোষ্ঠিবদ্ধ জনবসতি রেল পথের বাদিকে বেশি মাত্রায় দেখা যাচ্ছে।

বিক্ষিপ্ত জনবসতি

তাছাড়াও এই উপগ্রহ চিত্রের সামগ্রিক ভাবে বিক্ষিপ্ত জনবসতি লক্ষ্য করা যাচ্ছে বিশেষত উপগ্রহ চিত্রের উত্তর পশ্চিম ও উত্তর পূর্ব অংশে এই ধরনের বিক্ষিপ্ত জনবসতি লক্ষ্য করা যাচ্ছে।

ভূ-প্রকৃতি

প্রদত্ত উপগ্রহ চিত্রের মানচিত্র নাম্বার $73\frac{M}{1}$ (C3) যেটি পশ্চিমবঙ্গের অন্তর্ভুক্ত বীরভূম জেলার অন্তর্গত, যার অক্ষাংশগত বিস্তার হল 23°45'N → 23°50'N এবং দ্রাঘিমাংশগত বিস্তার হল — 87°10'E → 87°15'E R.F, 1:50000 ও অনুপাতিক স্কেলার বিস্তার হল 20 মিটি, উপগ্রহ চিত্রের ভারতীয় উপগ্রহ (IRS) দ্বারা তোলা হয় 2018 সালে।

- প্রদত্ত উপগ্রহ চিত্রে সামগ্রিক পর্যালোচনা সাপেক্ষে ভূ-প্রকৃতি গত যে সমস্ত বৈশিষ্ট গুলি পরিলক্ষিত হচ্ছে সেগুলি নিম্নরূপ।

i) প্রদত্ত চিত্রে সর্বোচ্চ সমোন্নতি রেখার মান হল 103 মিটার যা চিত্রের উত্তর দিকে অবস্থান করেছে।

ii) সর্বনিম্ন সমোন্নতি রেখা সমূহ মান হল 40 মিটার যা চিত্রের মাঝামাঝি দক্ষিণ প্রান্ত বরাবর অবস্থান করেছে।

iii) প্রদত্ত চিত্রের উত্তর দিকের অংশ গুলিতে সমোন্নতি রেখাগুলি কাছাকাছি অবস্থান করেছে অর্থাৎ উত্তর দিকের অংশগুলি হল খাড়াঢাল প্রকৃতির।

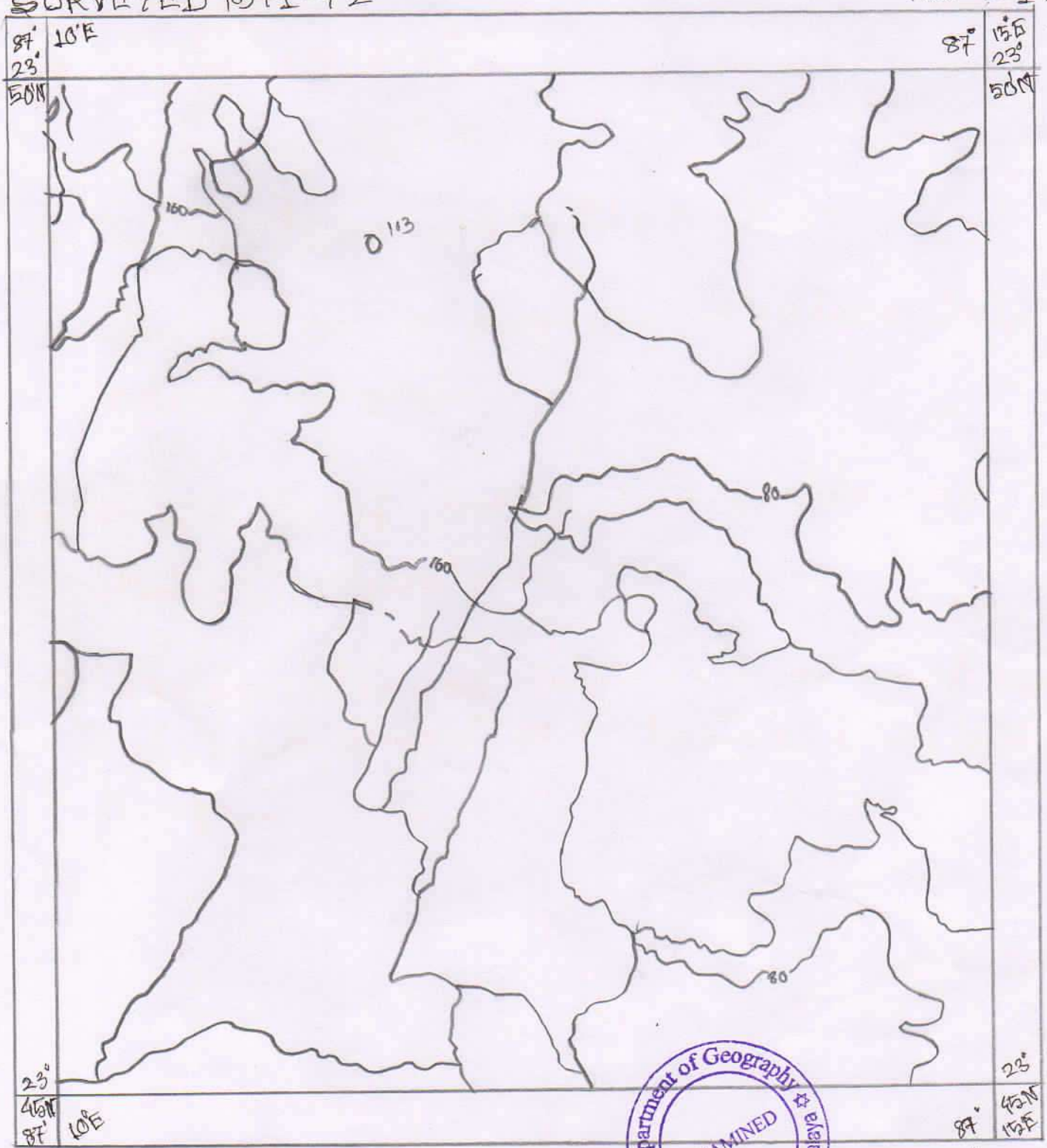
iv) অপর দিকে চিত্রের দক্ষিণ দিকে সমোন্নতি রেখাগুলি বিস্তার অনেক বেশি লক্ষ্য করা যাচ্ছে, অর্থাৎ দক্ষিণ দিকের অংশ গুলি হল মৃদুঢাল প্রকৃতির।

উপরোক্ত চিত্রের সমোন্নতি রেখার বিস্তার 20 মিটার, সমমাত্রিক পর্যালোচনের সাপেক্ষে প্রকৃতিগত অবস্থান খাড়াঢাল ও মৃদুঢাল।

WEST BENGAL
BIRBHUM DIST

SURVEYED 1971-72

NO-73 M/1 (C3)



Contour Interval 20 Metres 1:50000 Published 1979

Contents

* Basic concept Energy Source
* Data product
* Sensing system
* Interactions with Atmosphere
* Principles of preparing standard False colour composite.
* Principle of image interpration and Feature. extraction.
* Preaparation of inventorise of Land use and Land cover (LULC) Feature from satellite image.

13.09.22

for Head
Department of Geography
Khatra Adibasi Mahavidyalaya

Department of Geography
EXAMINED
Khatra Adibasi Mahavidyalaya

Conclusion

The field work on remote sensing provides students with comprehensive knowledge and practical skills in using remote sensing technologies for geographical studies. By understanding the principles, techniques, and applications of remote sensing, students will be better equipped to analyze and interpret geographical data, contributing to their academic and professional growth in the field of geography.

Khatra Adibasi Mahavidyalaya

P.O.: Khatra, Dist. Bankura, West Bengal, Pin: 722140
Phone: 8900057220 E-mail: *khatraacollege@gmail.com/ kacollege@rediffmail.com*
Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Date .....

Certificate of Project Completion

This is to certify that the following students [5th semester] of **Department of Geography**, has successfully completed the project work titled **"REMOTE SENSING" [Course Code: SP/GEO/504/SEC-3]** under the guidance of **Sri. Bhanu Kumar Mandal Department of Geography, Khatra Adibasi Mahavidyalaya** from 07.08.2022 to 08.09.2022 in the academic year 2022-23.

Sl No.	Name
1	SUBHADIP MAHATA,
2	CHANDANA MAHATA
3	PABITRA TUDU
4	BINOD MUDI
5	SANJIT KARMAKAR
6	NAROTTAM TEWARI
7	SAGAR GARAI
8	POULOMI SEN
9	SUDIP LAYEK

Khatra Adibasi Mahavidyalaya Estd.-1979 Khatra, Bankura

This project work/field work has been evaluated and found to meet the requirements and standards set by the Department of Education.

We commend the following students for their hard work, dedication, and commitment to excellence.

Department of Geography Khatra Adibasi Mahavidyalaya EXAMINED

13.09.22

Supervisor's Signature:

Head
Department of Geography
Khatra Adibasi Mahavidyalaya

Principal's Signature:

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF PHYSICAL EDUCATION

(FIELD WORK 2022-23)

LEADERSHIP CAMPING PROGRAMME

PAPERCODE: UG/PEDG/504/SEC-3

SUBMITTED BY

5TH SEMESTER STUDENTS

UNDER THE GUIDANCE OF

- SMT. TITHI ROY
- SRI MONOJIT MANDAL

Date- 20/12/2022

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct **"Field Work" Under Physical Education Course (Field Trip), Course code: UG/PEDG/504/SEC-3**

Khatra Adibasi Mahavidyalaya * Khatra, Bankura * Estd-1979

Respected Sir/Madam,

I am writing to seek your kind support to conduct a field work titled: **"Leadership Camping Programme"** as an outcome of a semester-long course titled: **"Indigenous & Minor Game and Excursion – Camping Program"** as a part of **Physical Education Course, Course code: UG/PEDG/504/SEC-3,** associated with field study for 5th semester students for the academic year 2022-23. The said field work has been scheduled in the departmental meeting and will be better to be scheduled on and from 28.12.2022 to 30.12.2022. The department has selected **Ranibandh High School, Ranibandh, Bankura, West Bengal** as the Camping site.

I assure you that I will adhere to all the guidelines and regulations of the college during this project/field work. I will also ensure that this work will not disrupt other regular activities of the college or the place involved.

I kindly request you to grant me the necessary permission to undertake this field work. I am confident that this experience will significantly contribute to the academic and professional growth of the students.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Allowed

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

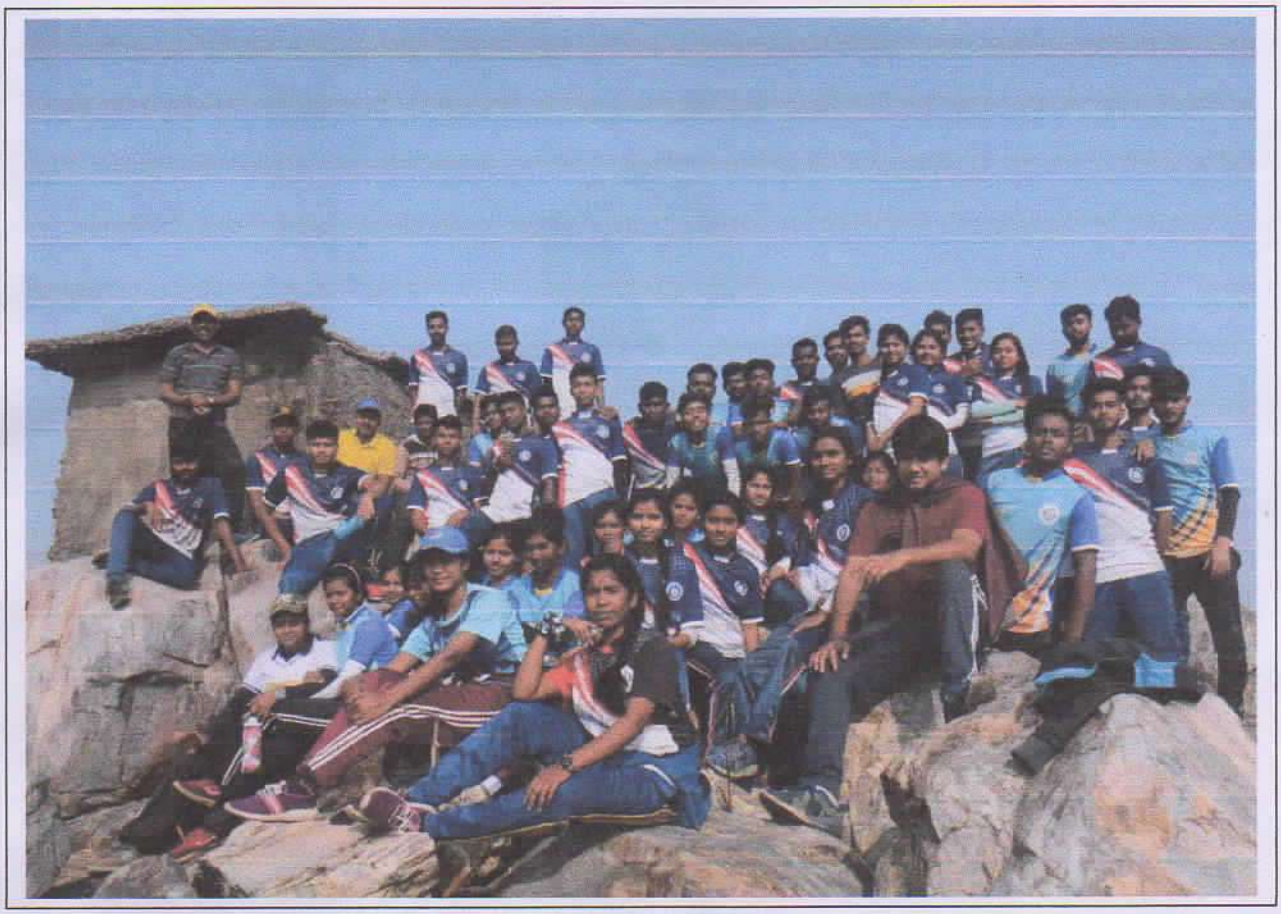
[Smt. Tithi Roy]
Assistant Professor & Head,
Department of Education,
Khatra Adibasi Mahavidyalaya

Tithi Roy

Departmental seal
Head
Department of Phy. Edn.
Khatra Adibasi Mahavidyalaya

Khatra Adibasi Mahavidyalaya

Leadership Camping Programme



Khatra Adibasi Mahavidyalaya Estd.-1979 Khatra, Bankura

2022-2023

FOR STUDENT OF SEMESTER -V

AT RANIBANDH HIGH SCHOOL,

RANIBANDH, BANKURA, WESTBENGAL

Jithi Roy.

Head
Department of Physical Education
Khatra Adibasi Mahavidyalaya

DEPARTMENT OF PHYSICAL EDUCATION

Khatra Adibasi Mahavidyalaya Estd.-1979 Khatra, Bankura

KHATRA ADIBASI MAHAVIDYALAYA

LEADERS TRAINNING CAMP-2022-2023

FOR STUDENT OF SEMESTER -V

AT RANIBANDH HIGH SCHOOL, RANIBANDH, BANKURA, WESTBENGAL

(FROM 28TH DECEMBER TO 30TH DECEMBER 2022)

CAMPING EDUCATION

- To learn new skill and attitudes
- To work and worship
- To develop social consciousness and sprit of service
- To natural and human companionship

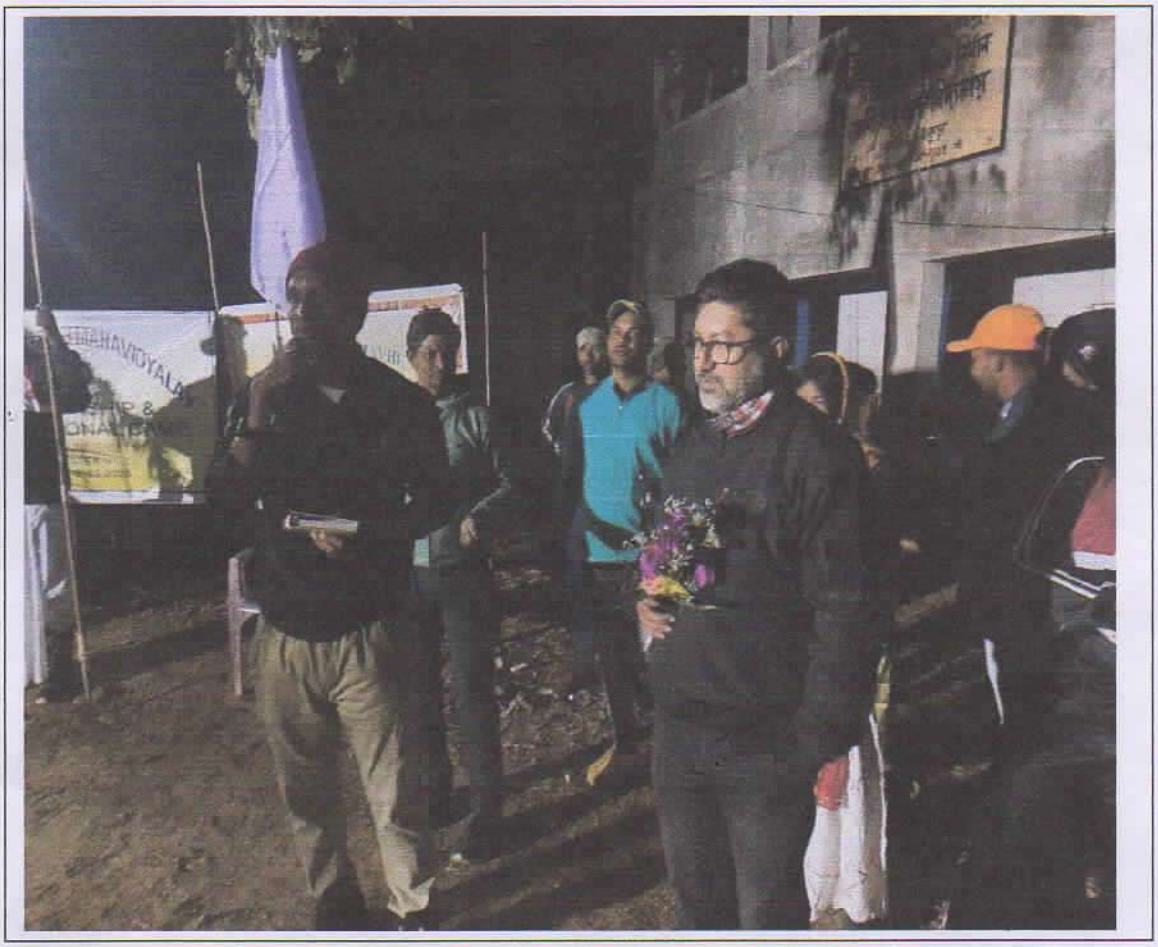
THROUGH

CAMPING ACTIVITIES

Flag hosting ceremony
Prayer
Art and craft
Community singing
Stunts and contests
Camp games
Group discussion
Hiking
Camp fire
Camp song
Cleanliness
Camp are not built around things. They are built around personalities.

Objectives and Goals

1. To further the welfare of campers and leaders, through camping.
2. To extend the recreational and educational benefits of out of doors living.
3. To give emphasis in camping to leadership and citizenship training in keeping with the principles and traditions of democracy.
4. To give emphasis to spiritual opportunities through camping.
5. To provide opportunities for fellowship among campers, 6. To stimulate high professional standards of camp leadership.
7. To provide for exchange of experiences and successful practices, and for development of materials, standards and other aids for the progress of P Camping.
8. To interpret camping to related groups and to the public.



PROGRAMME AT CAMP

(29/12/2022)

○ 5.30 am-	Rising Call
○ 6.30am-	Tea
○ 7.00 am-	Assembly, Attendance, Prayer, Flag Hosting.
○ 7.15 am-	Conditioning
○ 8.15 am-	Cleaning up Inspection of camp unit and areas.
○ 9.00 am -	Break Fast
○ 10.00 am-	Special Programme (Paper Chasing)
○ 1.00 pm-1.30pm-	Lunch
○ 2.00 pm-3.00 pm	Programme Practice
○ 3.15 pm-4.15 pm -	Game
○ 5.00 pm-5.30 pm-	Tiffin
○ 6.30 pm-8.30 pm-	Camp fire
○ 9.00 pm 9.30 pm-	Dinner
○ 9.30 pm-	Light Off

PROGRAMME AT CAMP

(28/12/2022)

10.30 A.M -	Assembly, Attendance, Prayer, Flag Hosting
11 am - 12 am-	Campus Cleaning
12.05pm - 12.30 pm-	Camp Song Practice
12.30 pm - 1.00 pm-	Bathing
1.00 pm - 1.30 pm-	Lunch
1.30 pm - 2.00 pm-	Break
2.00 pm - 3.00 pm	Programme Practice
3.15pm - 4.15 pm -	Game
5.00 pm - 5.30pm-	Tiffin
6.30 pm - 8.30 pm-	Camp Fire
9.00 pm - 9.30 pm-	Dinner
9:30-	Light Off

Khatra Adibasi Mahavidyalaya
Estd.-1979
Khatra, Bankura

Jithi Roy.
Head
Department of Physical Education
Khatra Adibasi Mahavidyalaya

PROGRAMME AT CAMP

(30/12/2022)

Khatra Adibasi Mahavidyalaya Estd.-1979 Khatra, Bankura

○ *5:30 am-*	*Rising Call*
○ *6:30 am-*	*Tea*
○ *7:00 am -7:30 am-*	*Flag down*
○ *7:30 am-8:30 am-*	*Campus cleaning*
○ *8:30 am-9.00 am-*	*Evalution*
○ *9:00am – 9:30 am-*	*Packing up*
○ *9.30am-*	*Leave camp site for Ranibandh High School*

Khatra Adibasi Mahavidyalaya

P.O.–Khatra : Dist.–Bankura : Pin– 722140 : West Bengal

Phone: 03243-299972 8900857220 E-mail:kacollege@rediffmail.com / khatraacollege@gmail.com

Website: www.kamv.ac.in

NAAC Accredited B+ (Second Cycle)

Ref No KAM/2022-23/1129 Date 23.12.2022

To
The Headmaster
Ranibandh High school
Ranibandh : Bankura

Sub - Permission for organising Camping Programme for the students of Sem. – V from 28.12.2022 to 31.12.2022

Sir,

May I request you to allow Prof. Tithi Roy, Assistant Professor & Prof. Monojit Mondal, SACT-2, Dept. of Physical Education to organise the Camping Programme for the students of Sem – V from 28.12.2022 to 31.12.2022 at your school premises. I shall be highly obliged if you kindly consider our request and do the needful at the earliest. Your acceptance and acknowledgment in this regard will be highly appreciated.

Thanking you.

Principal
(Dr. Nityananda Patra)
Khatra Adibasi Mahavidyalaya
Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

CAMP FIRE LIGHTING CEREMONY

1. SPIRIT OF CHARACTER:

"I am the spirit of Character who is spotless. With my presence in this camp, there sh by purity, Unselfishness, sportsmanship and respect for all in thought, wor and deed of all the campers. Their character shall be as pure as the flame of my torch."

2. SPRIT OF HEALTH:

"I am the spirit of Health. I shall give strength to the body, mind, and the spirit of the campers. I shall keep them free from all sickness moral, menta and physical. They shall be as powerful the flame of my torch."

3. DEMOCRACY:

"I am the spirit of Democracy. I shall prevall over the previleges and duties o the campers. I shall enable them to establish self- Government, self discipline and self-sacrifice. My torch is the symbol of equality of all humar beings like the flames of all kinds of fire."

4. SPIRIT OF FRIENDSHIP:

"I am the spirit of Friendship. I shall establish understanding loyalty, co- operation and love amongst all the campers. Their love shall be as bright as the brightness of my torch."

5. SPIRIT OF CITIZENSHIP:

"I am the spirit of Citizenship. I shall make the campers a happy community. They shall develop patriotism, leadership, fellowship and consideration for other, and above all the love God and service to mankind, irrespective of race, caste, colour or creed. They shall feel as the flame of my torch."

6. SPIRIT OF FUND AND HAPPINESS:

"I am the spirit of Fun and Happiness; I shall be in this camp through rain or sun-shine. I shall replace the hardships and difficulties of camp life. The flame of my torch is like the cheer-fulness which overcomes all troubles."

7. ALL THE SPIRITS:

We put torches to light your campfire (First one leads and all present repeat after him). Let this fire purify our thoughts and action and make us a community united in love for the glory of God, country and mankind."

KHATRA ADIBASI MAHAVIDYALAYA

➢ STUDENTS NAME

- ❖ JAYASHREE PATRA
- ❖ BAPI MANDAL
- ❖ KABITA RAJOWAR
- ❖ ARPITA HALDAR
- ❖ SONIA BAURI
- ❖ ANNADA MAJHI
- ❖ UJJAWAL CHATTERJEE
- ❖ AJOY RANA
- ❖ SUPRAKASH AULI
- ❖ RABINDRANATH SARDAR
- ❖ PURNIMA SINGHA
- ❖ LAKSHMIPRIYA RAKSHIT
- ❖ ANWESHA CHAKRABORTY
- ❖ RABINDRANATH PRAMANIK
- ❖ SUDIP LAYEK
- ❖ SAGUN HEMBRAM
- ❖ BINOD MUDI
- ❖ SAGUN SAREN
- ❖ CHANDANA MAHATA
- ❖ DHANANJAY TUDU
- ❖ GURUDAS TUDU
- ❖ KHOKAN MAHATA
- ❖ KAJAL KAR MODAK
- ❖ RIYA MAHATA
- ❖ SUSANTA BHUIYA
- ❖ SUDIP MAHATA
- ❖ UJJWAL BAURI
- ❖ RAJIB BAURI
- ❖ RAHUL MAHATA
- ❖ SOVAN MANDAL
- ❖ SAILEN HEMBRAM
- ❖ SOUVIK GHOSH

➢ TEACHERS NAME

- ❖ **MONOJIT MANDAL**
- ❖ **TITHI ROY**

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

Tithi Roy.

Head
Department of Physical Education
Khatra Adibasi Mahavidyalaya

Khatra Adibasi Mahavidyalaya

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Khatra Adibasi Mahavidyalaya * Estd-1979 * Khatra, Bankura

Date 30/12/2022

Certificate of Project Completion

This is to certify that the following students of **5th semester**, has successfully completed the project titled **"Field Work" [Course Code: UG/PEDG/504/SEC-3]** under the guidance of Assistant Professor **Tithi Roy, Faculty & Head, Department of Physical Education, Khatra Adibasi Mahavidyalaya** throughout the 5th semester in the academic year 2022-23.

This project work/field work has been evaluated and found to meet the requirements and standards set by the Department of Physical Education.

We commend the following students for their hard work, dedication, and commitment to excellence.

SL	NAME OF THE STUDENTS	SL	NAME OF THE STUDENTS
1	AYASHREE PATRA	17	BINOD MUDI
2	BAPI MANDAL	18	SAGUN SAREN
3	KABITA RAJOWAR	19	CHANDANA MAHATA
4	ARPITA HALDAR	20	DHANANJAY TUDU
5	SONIA BAURI	21	GURUDAS TUDU
6	ANNADA MAJHI	22	KHOKAN MAHATA
7	UJJAWAL CHATTERJEE	23	KAJAL KAR MODAK
8	AJOY RANA	24	RIYA MAHATA
9	SUPRAKASH AULI	25	SUSANTA BHUIYA
10	RABINDRANATH SARDAR	26	SUDIP MAHATA
11	PURNIMA SINGHA	27	UJJWAL BAURI
12	LAKSHMIPRIYA RAKSHIT	28	RAJIB BAURI
13	ANWESHA CHAKRABORTY	29	RAHUL MAHATA
14	RABINDRANATH PRAMANIK	30	SOVAN MANDAL
15	SUDIP LAYEK	31	SAILEN HEMBRAM
16	SAGUN HEMBRAM	32	SOUVIK GHOSH

Tithi Roy

Supervisor's Signature

Head
Department of Phy. Edn.
Khatra Adibasi Mahavidyalaya

Principal's Signature:

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF MATHEMATICS

(PROJECT WORKS 2022-23)

PAPERCODE: SH/MTH/604/DSE- 4

UNDER THE GUIDANCE OF

- DR. (MD.) ASIF IKBAL
- DR. RIMA BARIK
- SHRI MADHAB KUMAR NANDI
- SHRI CHANDI DAS GOP

To

The Principal

Khatra Adibasi Mahavidyalaya

Khatra, Bankura

Sub: Application for the permission for conducting Student Seminar in the department of Mathematics

Sir

This is for your kind perusal and permission that the department of Mathematics wishes to organize a Student Seminar on 09/03/2023for the final year students to assess them with their knowledge and skill of presentation of a topic.

Your august presence and valuable guidance are immensely expected in the aforesaid programme.

Please allow us to proceed with the programme and to make necessary arrangements for it, on the said date.

Thanking You,

Dated: 03/03/2023

Place: Khatra

Yours sincerely

Reina Barik

Head
Department of Mathematics
Khatra Adibasi Mahavidyalaya

Head

Dept. of Mathematics

Principal
Khatra Adibasi Mahavidyalaya
Khatra :: Bankura

ASSIGNMENT PROBLEM

DEPERTMENT OF MATHEMATICS

KHATRA ADIBASI MAHAVIDYALAYA

BANKURA UNIVERSITY

SUMITTED BY :PUNAM RAKSHIT

UID: 20113121004

REG. NO : 03106 OF 2020 -21

SEMESTER: 6 TH

PAPER : PROJECT WORK [62117]

*UNDER THE SUPERVISION OF : Dr. Md. Asif Ikbal

ACKNOWLEDGEMENT

I would like to express my special thanks to gratitude to my Mathematics Lecturer Dr. Md. Asif Ikbal for his guidence and support in completing my project.

Name :- Punam Rakshit
6th sem (Mathematics Department)
UID :- 20113121004

CONTENT

INTRODUCTION

Assignment problem Plays a major role in our real life. Problems related to assignment arise in a range of fields, for example healthcare transportation, education, sports e.t.c.

An assignment problem is a special type of linear programming problem where the objective is to minimize the cost or time of completing a number of jobs by a number of persons. One of the important characteristicsof assignment problem is that only one job (or worker) is assigned to one machine (or project).

This method was developed by D. Koning, a Hungarian mathematician and is therefore known as the Hungarian method of assignment problem. In order to use this method, one needs to know only the cost of making all the possible assignments. Each assignment problem has a Matrix (table) associated with it. Normally, the objects (or people) one wishes to assignare expressed in rows, where as the columns represent the tasks (or things) assigned to them.

HISTORY

Simpler and more efficient method (known as Hungarian Method) was developed and published in 1955 by Harlod William Khun, who gave the name "Hungarian Method" because the algorithm was largely based on the earlier works of two Hungarian mathematicians: D. Konig and J. Eger vary.

SIGNIFICANCE OF THE STUDY

The assignment problem refers to the analysis on how to assign objects to objects in the best possible way (optimal way).

The assignment signifies underlying combinatorial structure, while the objective function reflects the desires to be optimized as much as possible. The essential characteristics of the assignment problem is that n resources are to be assigned to n activities such that each resource is allocated to each activity and each activity is performed by one resourceonly. The allocation is to be done in such a way that the resultant effectiveness will be maximized.

Matrix form of assignment problem

The assignment problem can be stated that in the form of $m \times n$

matrix C_{ij} called a Cost Matrix (or) Effectiveness Matrix where C_{ij} is

the cost of assigning i^{th} machine to j^{th}.

$$\begin{bmatrix} C_{11} & \cdots & C_{1n} \\ \vdots & \ddots & \vdots \\ C_{m1} & \cdots & C_{mn} \end{bmatrix}$$

MATHEMATICAL FORMULATION OF AN ASSIGNMENT PROBLEM :

Consider an assignment problem of assigning n jobs to n machines (one job to one machine). Let C_{ij} be the unit cost of assigning ith machine to the jth job and ,ith machine to jth job.

Let x_{ij}= 1 , if jth job is assigned to ith machine.

x_{ij}= 0 , if jth job is not assigned to ith machine.

Minimize Z = $\sum_{i=1}^{n} \quad \sum_{j=1}^{n} c_{ij} \; X_{ij}$
subject to the constraints
$\sum_{i=1}^{n} X_{ij}$ =1 , j= 1,2,3,4,….., n

$\sum_{j=1}^{n} X_{ij}$ =1, I = 1,2, 3, ..,n
xij = 0 or 1

ASSIGMENT ALGORITHM (OR) HUNGARIAN METHOD

First check whether the number of rows is equal to number ofcolumns, if it is so, the assignment problem is said to be balanced.Then proceed to step 1. If it is not balanced, then it should be balanced before applying the algorithm.

Step 1: Subtract the smallest cost element of each row from all theelements in the row of the given cost matrix. See that each row contains at least one zero.

Step 2: Subtract the smallest cost element of each column from allthe elements in the column of the resulting cost matrix obtained bystep 1 and make sure each column contains at least one zero.

Step 3: (Assigning the zeros)
(a) Examine the rows successively until a row with exactly one unmarked zero is found. Make an assignment to this single unmarked zero by encircling it. Cross all other zeros in the column of this encircled zero, as these will not be considered for any future assignment. Continue in this way until all the rows have been examined.
(b) Examine the columns successively until a column with exactly one unmarked zero is found. Make an assignment to this single unmarked zero by encircling it and cross any other zero in its row. Continue until all the columns have been examined.

Step 4: (Apply Optimal Test)
(a) If each row and each column contain exactly one encircled zero,then the current assignment is optimal.

(b) If atleast one row or column is without an assignment (i.e., if there is atleast one row or column is without one encircled zero), then the current assignment is not optimal. Go to step 5. Subtract the smallest cost element of each column from all the elements in the column of the resulting cost matrix obtained by step 1 and make sure each column contains atleast one zero.

Step 5: Cover all the zeros by drawing a minimum number of straight lines as follows:
(a) Mark the rows that do not have assignment.
(b) Mark the columns (not already marked) that have zeros in markedrows.
(c) Mark the rows (not already marked) that have assignments inmarked columns.
(d) Repeat (b) and (c) until no more marking is required.
(e) Draw lines through all unmarked rows and marked columns. If the number of these lines is equal to the order of the matrix, then it is anoptimum solution otherwise not.
Step 6: Determine the smallest cost element not covered by thestraight lines. Subtract this smallest cost element from all theuncovered elements and add this to all those elements which are lyingin the intersection of these straight lines and do not change theremaining elements which lie on the straight lines.

Step 7: Repeat steps (1) to (6), until an optimum assignment isobtained.

VARIATION IN ASSIGNMENT PROBLEM

The structure of the assignment problem may be extended in the following cases**.**

1. MAXIMIZATION PROBLEM: In some situations the assignment problem may call for maximization of profit, revenue etc. as the objective. For dealing with such problems, we first change it into an equivalent minimization Problem. This is achieved by subtracting each of the elements of the given pay-off matrix from a constant value (say K) usually the larges of all values in the given matrix is located and them each one of the values is Subtracted from it such as

3	9
6	4

6	0
3	5

Here the largest element is 9. The operation is Performed as stated and we get the modified cost matrix.

Then the problem is solved the same way as the minimization problem.

ii**) Unbalanced problem**: If number of rows ≠Number of columns, then the problem will be unbalanced problem and in this case we adda fictitious row or column, which ever has deficiency with zero cost.

(III) Negative cost: If the cost matrixcontain some negative cost then we add to each element of the row or column. a quantity, sufficient to make all the cell- elements non-negative.

Then we proceed with the usual assignment algorithm.

iv) Impossible assignment (vacant cell): If some assignment be Impossible, that is,

if some job cannot be performed by some particular facility, then we avoid this effectively by putting a large cast in that cell which prevents that particular assignment from being effective in the optimal solution.

Note: -An assignment problem may have morethan one solution having the same minimum cost .

Example of Assignment problem

Problem 1: Solve the following assignment problem shown in Table using Hungarian method. The matrix entries are processing time of each man in hours.

I	ii	iii	iv	v
20	15	18	20	25
18	20	12	14	15
21	23	25	27	25
17	18	21	23	20
18	18	16	19	20

Solution: The given problem is balanced with 5 job and 5 men

$$A = \begin{bmatrix} 20 & 15 & 18 & 20 & 25 \\ 18 & 20 & 12 & 14 & 15 \\ 21 & 23 & 25 & 27 & 25 \\ 17 & 18 & 21 & 23 & 20 \\ 18 & 18 & 16 & 19 & 20 \end{bmatrix}$$

Subtract the smallest cost element of each row from all the elements in the row of the given cost matrix. See that each row contains at least one zero.

$$A = \begin{bmatrix} 5 & 0 & 3 & 5 & 10 \\ 6 & 8 & 0 & 2 & 3 \\ 0 & 2 & 4 & 6 & 4 \\ 0 & 1 & 4 & 6 & 3 \\ 2 & 2 & 0 & 3 & 4 \end{bmatrix}$$

Subtract the smallest cost element of each column from all the elements in the column of the given cost matrix. See that each column contains at least one zero.

$$A = \begin{bmatrix} 5 & 0 & 3 & 3 & 7 \\ 6 & 8 & 0 & 0 & 0 \\ 0 & 2 & 4 & 4 & 1 \\ 0 & 1 & 4 & 4 & 0 \\ 2 & 2 & 0 & 1 & 1 \end{bmatrix}$$

Assigning the zeros, we have the following A=

$$A = \begin{bmatrix} 5 & \boxed{0} & 3 & 3 & 7 \\ 6 & 8 & \emptyset & \boxed{0} & \emptyset \\ \boxed{0} & 2 & 4 & 4 & 1 \\ \emptyset & 1 & 4 & 4 & \boxed{0} \\ 2 & 2 & \boxed{0} & 1 & 1 \end{bmatrix}$$

Since each row and each column contain exactly one encircled zero, then the current assignment is optimal.

Where the optimal assignment is as 1 to II, 2 to IV, 3 to I, 4 to V and 5 to III .

The optimal z = 15+14+21+20+16 = 86 hours.

Problem 2 : The personal manager of ABC company wants to assign Mr. X, Mr.Y and Mr.Z to regional offices as per the assignment table given below. But the form also has an opening in its Chennai offices and would send one of the three to that branch if it were more economical than a move to Delhi, Mumbai or Kolkata. It will cost Rs. 2000 to relocate Mr. X to Chennai, Rs 1600 to relocate Mr. Y there, and Rs 3000 to Mr. Z. what is the optimum assignment of personnel to offices?

Office / Hiree	Delhi	Mumbai	Kolkata
Mr.X	1600	2200	2400
Mr.y	1000	3200	2600
Mr.Z	1000	2000	4600

Solution: The given problem is an unbalanced assignment problem as the cost table has one more column to represent Chennai. To balance the problem, add a dummy row (person. Say Mr. W) with a zero-relocation cost to each city. Revised cost matrix is shown in Table 1.

Office / Hiree	Delhi	Mumbai	Kolkata	Chennai
Mr .X	1600	2200	2400	2000
Mr. Y	1000	3200	2600	1600
Mr .Z	1000	2000	4600	3000
Mr.W	0	0	0	0

Table – 1

Now we apply Hungarian method to solve this balanced assignment problem. Subtract smallest number in each row columb subtraction will give the same numbers and therefore it is not necessary. This is shown in table -2

Office / Hiree	Delhi	Mumbai	Kolkata	Chennai
Mr.X	0	600	800	400
Mr.Y	0	2200	1600	600
Mr.Z	0	1000	3600	2000
Mr.W	0	0	0	0

Table – 2

Now we draw minimum number of horizontal and vertical lines in table -2 to cover all zeros. this is done by drawing a horizontal line through the fourth row and a vertical line through the first column. Since the number of lines =2 ≠order of cost matrix (4), so optimality is not reached. To improve the cost matrix, subtract smallest uncovered number 400 from all uncovered elements and add it to the element where two lines intersect. This is shown in table -3.

Office / Hiree	Delhi	Mumbai	Kolkata	Chennai
Mr.X	0	200	400	0
Mr.Y	0	1800	1200	200
Mr.Z	0	600	3200	1600
Mr.W	400	0	0	0

Table – 3

Again, we draw minimum number of horizontal and vertical lines to cover all zeros in table 3. Since the number of lines =3 ≠order of the cost matrix (4), optimal condition is not reached. To improve this cost matrix, subtract uncovered number 200 from all uncovered elements and add it to the elements where to lines intersect. this revised table is shown in table- 4 below.

Hiree \ Office	Delhi	Mumbai	Kolkata	Chennai
Mr.X	200	200	400	0
Mr.Y	0	1600	1000	0
Mr.Z	0	400	3000	1400
Mr.W	600	0	0	0

Table – 4

In Table -4, we see that minimum number of lines =3 ≠ order of cost matrix. Thus, optimal condition is not reached. Again, we have to improve the cost matrix by subtracting the smallest uncovered number 200 following the rule as done in table-2 and Table-3 . The revised matrix is shown in Table-5 below.

Hiree \ Office	Delhi	Mumbai	Kolkata	Chennai
Mr.X	200	0	200	Ø
Mr.Y	Ø	1400	800	0
Mr.Z	0	200	2800	1400
Mr.W	800	Ø	0	200

Table – 5

In Table -5, we draw minimum number of lines to cover all zeros. It is seen that the number of lines=4=order of cost matrix .Hence, optimal condition is reached at this stage. Assignments are done to the elements having zero cost.

Optimal assignments are

Mr. X→ Mumbai

Mr. Y→ Chennai

Mr. Z→ Delhi

Minimum cost = Rs. (2200+1600+1000) = Rs. 4800

Problem 3:- Five different machines can do any of the five required jobs, with different profits resulting from each assignment as shown below :

Job \ Machine	A	B	C	D	E
1	30	37	40	28	40
2	40	24	27	21	36
3	40	32	33	30	35
4	25	38	40	36	36
5	29	62	41	34	39

SOLUTION*: -* The given problem is a maximization assignment problem. The profit matrix is converted into relative loss matrix as shown in the following Table-1 by subtracting each element from the largest element 62.

Job \ Machine	A	B	C	D	E
1	32	25	22	34	22
2	22	38	35	41	26
3	22	30	29	32	27
4	37	24	22	26	26
5	33	0	21	28	23

Table- 1 (Minimization A.P.)

Now, we apply Hungarian Method to solve the above assignment problem in Table- 1. In Table- 1, subtract the minimum element of each row from the elements of that row. Then, the revised matrix is shown in Table- 2 below.

Job \ Machine	A	B	C	D	E
1	10	3	0	12	0
2	0	16	13	19	4
3	0	8	7	10	5
4	15	2	0	4	4
5	33	0	21	28	23

Table- 2

In Table- 2, subtract the minimum element of each column from the elements of that column. The reduced matrix is shown in Table- 3 below.

Job \ Machine	A	B	C	D	E
1	10	3	0	8	0
2	0	16	13	15	4
3	0	8	7	6	5
4	15	2	0	0	4
5	33	0	21	24	23

Table- 3

In Table- 3, we draw minimum number of horizontal and vertical lines to cover zeros. We see that the number of lines = 4 ≠ order of cost matrix (5). So, optimality condition is not reached. We have to improve the cost matrix by subtracting smallest uncovered element 4 from all the uncovered elements and it to the elements at the intersection of the lines. The improve cost matrix is shown in Table- 4 below.

Job \ Machine	A	B	C	D	E
1	14	3	0	8	Ø
2	Ø	12	9	11	0
3	0	4	3	2	1
4	19	2	Ø	0	4
5	37	0	21	24	23

In table -4, we draw minimum number of horizontal and vertical lines to cover all zeros. We were that the number of lines =5=order of cost matrix. Hence, the condition of optimality is reached. To find the optimum assignment, we considered only the zero elements of the matrix. the optimum assignment schedule is shown in the Table -4 within square boxes. Thus,

optimal assignments are

Job 1→C, job 2 →E, JOB 3→ A, Job 4 → D, Job5 → B

Hence, the maximum profit through optimum assignment

=40+36+40+36+62=214

CONCLUSION

The assignment problem is a well-known optimization problem in operations research and mathematical optimization. It involves assigning a set of tasks to a set of agents in such a way that the overall cost or benefit is minimized or maximized, depending on the objective. It is very important to choose the right approaches in solving the problem, so as to obtain an optimal or near optimal depending on the complexity of the problem. This research may open up different paths associated with real life problems

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PROJECT WORK

TRANSPORTATION PROBLEM

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CONTENTS

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1. INTRODUCTION:

Linear programming is a method to achieve the best outcome in a mathematical model whose requirements are represented by linear relationship .linear programming is a special case of mathematical programming.

A transportation problem is (T.P) is a particular type of linear programming problem .In which a particular commodity which is stored at different origins is to be transported to different destination in such a way that the transportation cost is minimum.

The problem was formalized by the French mathematician Gaspard Monge in 1781. In the 1920 A.N Tolstoi was one of the first to study the transportation problem mathematically.

Frank Lauren Hitchcock (1875-1957) was an American mathematician and physicist notable for vector analysis. He formulated the transportation problem in 1941. The linear programming formulation of the transportation problem is also known as the Hitchcock-Koopmans problem.

There are many techniques to solve a T.P. and find out its optimal solutions. Some of these well-known methods are Row Minimum Method, column
Minimum Method, North West Corner Method, Vogel's approximation method etc. In this project we will know that how to solve a T.P. by Vogel's approximation method.

In this project we study transportation problem briefly from mathematical perspective (especially as a LPP). In Section 2 we establish the mathematical formation of a general transportation problem. Then after presenting definition some basic terms in Section 3, we discuss the problem of finding optimal solution of a T.P. in form of a flowchart in Section 4. Section 5 deals with the discussion on Vogel's approximation method for solving a T.P. Finally in Section 6 we give an overall conclusion of the whole project.

2.DEFINITIONS:

2.1 Decision Variables:

The variables in the Linear Programming (LP) model of the TP will hold the values for the number of units shipped from one source to a destination.

The decision variables are:

X_{ij}= the size of shipment from warehouses i to outlet$j$,

Where i = 1,2,3. . . m and$j$ = 1,2,3, . . . n .

This is set of$m$. n variables.

2.2 Objective Function:

The objective function contains costs associated with each of the variables. It is a minimization problem.

Consider the shipment from warehouse i to outlet j. For any i and j, the transportation cost per unit C_{ij} and the size of the shipment is . Since we assume that the total cost function is linear, the total cost of this shipment is given by $cijxij$ Summing over all i and j now yields the overall transportation cost for all warehouse outlet combinations. That is, our objective function is:

min z= $\sum mi$=1 $\sum nj$=1 $cijxij$

2.3 Initial Basic Feasible Solution (I.B.F.S):

Let us consider a T.P involving m origins and n destinations. Since the sum of origin capacities equals the sum of destination requirements, a feasible solution always exists. Any feasible solution satisfying $m + n - 1$ of the $m + n$ constraints is a redundant one and hence can be deleted. This also means that a feasible solution to a T.P can have at the

most only $m + n - 1$ strictly positive component, otherwise the solution will degenerate. It is always possible to assign an initial feasible solution to a T.P. in such a manner that the rim requirements are satisfied. This can be achieved either by inspection or by following some simple rules. We begin by imagining that the transportation table is blank i.e. initially all $x_{ij} = 0$. The simplest procedures for initial allocation discussed in the following section.

2.4 Feasible Solution (F.S.):

A set of non-negative allocations $x_{ij} > 0$ which satisfies the row and column restrictions is known as feasible solution.

2.5 Basic Feasible Solution (B.F.S.):

A feasible solution to a m-origin and n-destination problem is said to be basic feasible solution if the number of positive Allocations are $(m + n - 1)$. If the number of allocations in a basic feasible solutions are less than $(m + n - 1)$, it is called degenerate basic feasible solution (DBFS) (Otherwise nondegenerate).

3. MATHEMATICAL FORMULATION:

Here our problem is to determine the number of unit's xij of the commodity which is to be transported from the ith origins to the jth destination in such a

way that the $=1$ total transporation cost $\sum_{i=1}^{m}\sum_{j=1}^{n} c_{ij}x_{ij}$ is minimum with $\sum_{i=1}^{m} s_i = \sum_{n}j \quad d_j$; $s_i, d_j \geq 0$ for balanced TP.

Obtaining the initial basic feasible solution vector or distribution plan for a balanced transport problem is an important task in the field of mathematical programming, with the target of attaining closer initial values for more efficient solutions. The aim of the study is to present an approximation method that leads to just such better proximityto the optimal solution. The study assumes a $m \times n$ balanced transport problem, representing m supplies and n demand centers. Classically, the transportation problem is defined as follows, where m is the Centre of production (origin) and n is the Centre of consumption (destination).

A transportation problem is completely define by a table given below:

To Destinations / From Origins		Destinations				
		M_1	M_2	...	M_n	Supply(s_i)
Origins	F_1	C_{11} X_{11}	C_{12} X_{12}	...	C_{1n} X_{1n}	s_1
	F_2	C_{21} X_{21}	C_{22} X_{22}	...	C_{2n} X_{2n}	s_2
	...	...	...	...	...	...
	F_m	C_{m1} X_{m1}	C_{m2} X_{m2}	...	C_{mn} X_{mn}	s_m
	Demand(d_j)	d_1	d_2	...	d_n	$\sum_{i=1}^{m} s_{i=} \sum_{j=1}^{n} d_j = t$

Taking into consideration the transport table

$C_{ij}(i = 1,2,3 \ldots m;\ j = 1,2,3, \ldots n)$ this shows the transportation costs of a unit and represents the transportation cost of a commodity taken from origin "i" to destination "j".X_{ij} shows the number of commodities to be transported from origin "i" to destination "j". Where the total amount of supply is equal to the total amount of demand, this transportation problem is called a "balanced transportation problem"; otherwise it is an "unbalanced transportation problem."

Provided that

$$\sum_{i=1}^{m} s_i = \sum_{j=1}^{n} d_j \quad ; s_i, d_j \geq 0$$

The general expression of classical transportation problem is expressed as

$$\text{minz} = \sum_{i=1}^{m} \sum_{j=1}^{n} c_{ij}\ x_{ij}$$

Subject to:

$$\sum_{i=1}^{m} x_{ij} = d_j ; j = 1,2, \ldots n$$

$$\sum_{j=1}^{n} x_{ij} = s_i ; i = 1,2, \ldots m$$

$$x_{ij} \geq 0 ; i = 1,2, \ldots m ; j = 1,2, \ldots n$$

4. OPTIMAL SOLUTION:

A feasible solution (not necessarily basic) is said to be optimal if it minimizes the total transportation cost.

Cell: It is a small compartment in the transportation tableau.

Circuit: A circuit is a sequence of cells (in the balanced transportation tableau) such that

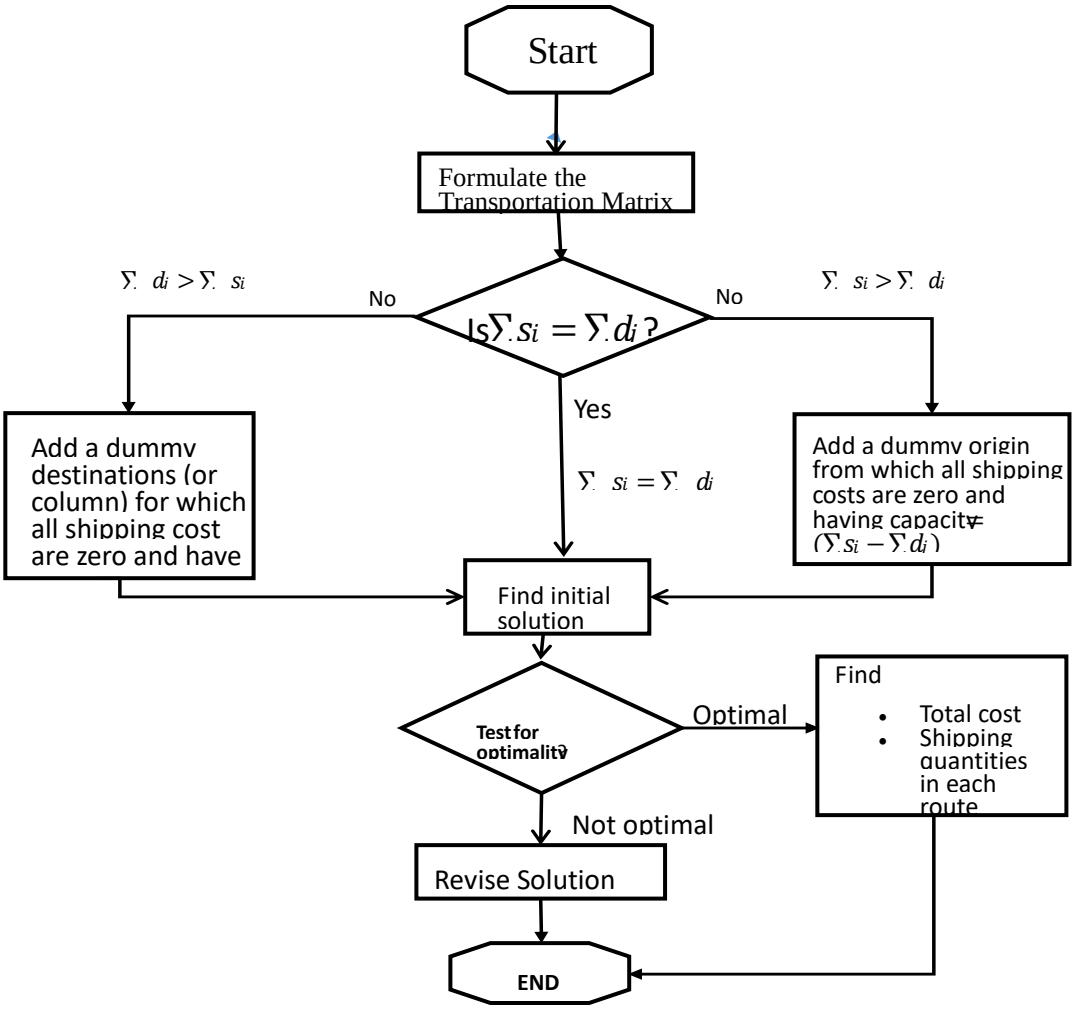
(i) It starts and ends with the same cell.

(ii) Each cell in the sequence can be connected to the next member by a horizontal or vertical line in the tableau.

Allocation: The number of units of items transported from a source to a destination which is recorded in a cell in the transportation tableau.

Basic Variables: The variables in a basic solution whose values are obtained as the simultaneous solution of the system of equations that comprise the functional constraints.

Flow chart solution for the Transportation Problem:



5. METHODOLOGY AND DISCUSSION

This chapter reviews the proposed solution methodology and approach for handling transportation problem in Guinness Ghana Ltd. The transportation problem seeks to minimize the total shipping costs of transporting goods from m origins (each with a supplys_i) to n destinations (each with a demand d_j), when the unit shipping cost from an origin, i, to a destination, j is c_{ij}.

5.1 Determination of an Initial Basic Feasible Solution (IBFS)

So far we have discussed some fundamental properties of a transportation problem which will help in solving a T.P .Now, we want to determine an initial basic feasible solution (IBFS) of a balanced T.P and from this we proceed to find another basic feasible solution(BFS)which will give the minimum transportation cost .In this case, the corresponding B.F.S . is called an optimal solution of the balanced T.P.

The Methods of obtaining an I.B.F.S. of a balanced Transportation problem are

(i)North-West Corner Method

(ii)Matrix Minima Method

(iii)Vogel's Approximation Method(VAM)

By each of these methods , we can obtain a basic feasible solution with at most (m+n-1) positive allocations completely satisfying all the availabilities and requirements simultaneously.

(i)North –West Corner Method:

A simple method of determining an I.B.F.S. of a balanced transportation problem is North-West Corner Method , introduced by A.Charnes(1917-1992) and W.W.Cooper(1914-2012) . This Method is also called as North-West Corner Rule.

(ii)Matrix Minima Method(or Least Cost Method)

The allocations obtained in this method is very useful as it takes into consideration the lowest cost and therefore, reduces the computation as well as the amount of time necessary to obtain the optimal solution.

(iii) Vogel's Approximation Method (VAM):

VAM is an improved version of the least-cost method that generally, but not always, produces better starting solutions. VAM is based upon the concept of minimizing opportunity (or penalty) costs. The opportunity cost for a given supply row or demand column is defined as the difference between the lowest cost and the next lowest cost alternative. This method is preferred over the methods discussed above because it generally yields, an optimum, or close to optimum, starting solutions. Consequently, if we use the initial solution obtained by VAM and proceed to solve for the optimum solution, the amount of time required to arrive at the optimum solution is greatly reduced.

Vogel's Approximation Method (VAM) Summary of Steps:

1. Determine the penalty cost for each row and column.
2. Select the row or column with the highest penalty cost.
3. Allocate as much as possible to the feasible cell with the lowest transportation cost in the row or column with the highest penalty cost.
4. Repeat steps 1, 2, and 3 until all rim requirements have been met.

- **Table of the VAM Penalty Cost:**

From \ To	A	B	C	Supply	
1	[6]	[8]	[10]	150	2
2	[7]	[11]	[11]	175	4
3	[4]	[5]	[12]	275	1
Demand	200	100	300	600	
	2	3	1		

- **The Initial VAM Allocation:**

VAM allocates as much as possible to the minimum cost cell in the row or column with the largest penalty cost.

From \ To	A	B	C	Supply	
1	6	8	10	150	2
2	7 175	11	11	175	
3	4	5	12	275	1
Demand	200	100	300	600	
	2	3	2		

- **The Second VAM Allocation:**

After each VAM cell allocation, all row and column penalty costs are recomputed

From \ To	A	B	C	Supply	
1	6	8	10	150	4
2	7 175	11	11	175	
3	4	5 100	12	275	8
Demand	200	100	300	600	
	2		2		

- **Table of the Third VAM Allocation:**

Recomputed penalty costs after the third allocation

From \ To	A	B	C	Supply
1	6	8	10 150	150
2	7 175	11	11	175
3	4 25	5 100	12 150	275
Demand	200	100	300	600

- **The Initial VAM Solution:**

The initial VAM solution; total cost = 5,125

VAM and minimum cell cost methods both provide better initial solutions than does the northwest corner method

From \ To	A	B	C	Supply
1	[6]	[8]	[10] 150	150
2	[7] 175	[11]	[11]	175
3	[4] 25	[5] 100	[12] 150	275
Demand	200	100	300	600

5.2 Optimality Test:

Following the determination of an I.B.F.S. to a balanced Transportation Problem, we have to check whether the solution obtained is optimal or not. In general , a T.P. is a minimization problem . Hence, at optimal stage, the net evaluation Z_{ij}-$c_{ij}\leq 0$ for all cells corresponding to non-basic variables. Thus, to test the optimality of an I.B.F.S. ,we shall have to determine the values of z_{ij}-c_{ij} for all cells corresponding to non-basic variables. We know that z_{ij}-c_{ij}=0 for all basic variables . if z_{ij}-$c_{ij}\leq 0$ is not Satisfied for all non-basic cells,we shall have to proceed further to get an optimal solution which will be discussed in future.Type equation here.

5.3 Determination of Net Evaluation (z_{ij}-c_{ij})[(u-v)-Method]:

Unlike the simplex method , the net evaluations for a T.P. can be determined more efficiently by using an indirect method , which makes use of the properties of the primal and dual problems.

Consider a balanced T.P. with m origins and n destinations as follows:

Minimize Z $\sum_{i=1}^{m} \sum_{j=1}^{n} c_{ij}x_{ij}$

Subject to $\sum_{j=1}^{n} x_{ij} = a_i$, $a_i>0$; i=1,2,…m

$\sum_{i=1}^{n}$ $X_{ij}=b_j$, $b_j>0$; j=1,2,…n

With $\sum_{i=1}^{m} a_i = \sum_{j=1}^{n}$ b_j and $X_{ij} \geq 0$ (i=1,2,…m ; j=1,2,…n).

Let $\underline{u}_1$, u_2, u_m and $v_1, v_2, \ldots v_n$ be the dual variables associated with the above origin and destination constraints respectively.Then, the dual of the above T.P. can be written as

Maximize $w=\sum_{i=1}^{m} a_i u_i + \sum_{j=1}^{n} b_j v_j$

Subject to $u_i + v_j \leq c_{ij}$ $(i=1,2,\ldots,m ; j=1,2,\ldots n)$

U_i and v_j are unrestricted in sign for all i,j.

If B is the basis of the primal at the optimal stage and $\overline{c_B}$ is the cost vector associated with the optimal B.F.S., then the dual optimal solution is given by $\overline{w}=\overline{c_B}\, B^{-1}$, where

$\overline{w}=(\bar{u},\bar{v})= (u_1,u_2,\ldots u_m , v_1,v_2,\ldots v_n)$

and the corresponding net evaluation for the cell (i,j) is given by

$z_{ij}-c_{ij} = (\overline{c_B}\, B^{-1})\bar{a}_{ij} - c_{ij}$

$= \overline{w}\, \bar{a}_{ij} - c_{ij}$

$=(u_1,u_2,\ldots u_m , v_1, \ldots v_n)(\bar{e}_i + \bar{e}_{m+j})-c_{ij}$

$= (u_i+V_j) - c_{ij}$ $(i=1,2,\ldots m ; j=1,2,..n)$

Where $\bar{a}_{ij}$ is the column vector of the constraint matrix associated with the variable x_{ij} .

6. Conclusion

The transportation cost is an important element of the total cost structure for any business.

The transportation problem was formulated as a Linear Programming and solved with the standard LP solvers such as the Management scientist module to obtain the optimal solution. The computational results provided the minimal total transportation cost and the values for the decision variables for optimality. Upon solving the LP problems by the computer package, the optimum solutions provided the valuable information such as sensitivity analysis for Guinness Ghana Ltd to make optimal decisions. Through the use of this mathematical model (Transportation Model) the business can identify easily and efficiently plan out its transportation, so that it cannot only minimize the cost of transporting goods and services but also create time utility by reaching the goods and services at the right place ad right time.

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Introduction

From the beginning of human history, prime numbers aroused human curiosity. What are they? Why are the questions related to them so hard? One of the most interesting things about prime numbers is their distribution among the natural numbers.

An integer p>1 is said to be a prime number, or simply a prime if its only positive divisors are 1 and p itself. The integer 1 is neither prime nor composite.

The oldest known area is the classical theorem that there are an infinite number of primes. During this time, the Greek mathematician Eratosthenes developed one of the most effective methods for determining larger primes up to a given limit. However, this method is only efficient for relatively small primes, no higher than 10 million. After this, there was very little development in prime number theory for over a millennium.

During the late 18th century, both Gauss and Legendre made similar conjectures regarding π(x), the number of prime numbers less than or equal to x. In particular, in 1798 Legendre estimated that π(x) could be estimated to x/log x. It is also impressive that at the age of 15 or 16, Gauss conjectured a similar result to Legendre, which was that $\pi(x) \approx \int_2^x \frac{1}{\log t} dt$. The first person to establish estimates of the true order of magnitude of π(x) was P.L. Chebyshev. In the mid 19th century he proved that $0.92 < \frac{\pi(x)}{x/\log x} < 1.11$ for all sufficiently large numbers x.

Objective and significance

Objective:-

The objective of this project is

1. Better understanding the distribution of prime numbers throughout the expansion of natural numbers.
2. To study the historic attempts of understanding prime numbers by Euclid and Eratosthenes.
3. To better study and comprehend modern theories of prime numbers, like Prime Number Theorem, Chebyshev's theorem, Merten's theorem etc.
4. To study the graphs of asymptotical distribution of primes.

Significance:-

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"Any Natural number can be written as product of a set of primes". Here are some significance of the study of prime numbers---

1. Primes are so much important in information security. It is used in RSA encryption and decryption.
2. They are used in generating error correcting codes used in telecommunication. They ensure that messages are sent and received with automatic correction.
3. Primes acts as the base for creating the public key cryptography algorithm.
4. They are used for Hash table.
5. They are used for generating pseudorandom numbers.
6. Primes are used in ISBN numbers for books.
7. Prime numbers and the zeros of Riemann zeta function are important in Quantum mechanics. They are connected to the energy level of quantum system.

Types of primes

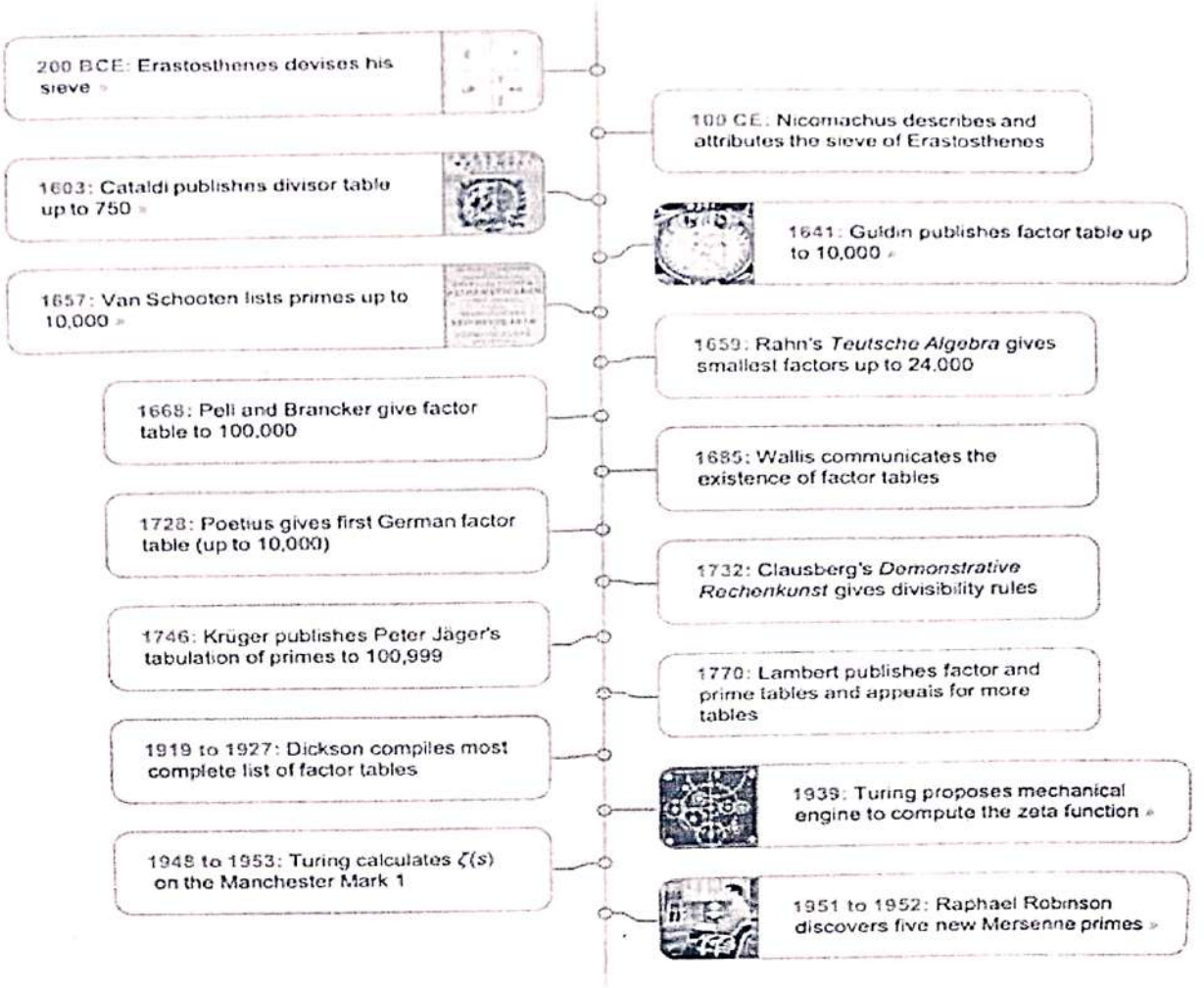
There are a several types of primes which are distributed in the whole set of natural numbers in a certain way. Some of them are listed below-

1. **Balanced primes:** Primes with equal sized prime gaps above and below them, so that they are equal to the arithmetic mean of the nearest prime above and below. Some examples of such primes are 5, 53, 157, 173, 211.
2. **Circular primes:** A circular prime number is a number that remains prime on any cyclic rotation of its digits (in base 10). Example- 2, 3, 5, 7, 11, 13, 17, 31.
3. **Factorial primes:** primes Of the form $n! - 1$ or $n! + 1$ are factorial primes. Examples- 2, 3, 5, 7, 23, 719, 5039.
4. **Sophie Germain primes:** when p and 2p+1 are both primes then p is called Sophie Germain primes. Example- 2, 3, 5, 11, 23, 29.
5. **Mersenne primes:** primes of the form $2^n - 1$ are Mersenne prime. Example- 3, 7, 31,127, 8191. As of 2023, 51 Mersenne primes are known. The largest known prime number, $2^{82,589,933} - 1$, is a Mersenne prime.
6. **Twin prime:** Where $(p, p+2)$ are both prime, then p and p+2 are called twin prime. Example- (3,5), (5,7), (11,13).

History

There are several Mathematicians who enrich the area of prime numbers and its distribution for centuries. Some of their works are listed below-

- The great Greek Mathematician Euclid in his Element show that there are infinite number of primes.
- Greek mathematician Eratosthenes utilized the concept of testing primality of a positive integer n, it is sufficient to divide n by primes not exceeding $\sqrt{n}$. His device is called the Seive of Eratosthenes which consist in writing all integers from 2 to n in natural order and then striking out all the multiples 2p, 3p, 4p, 5p.... of all primes $p \leq \sqrt{n}$. The integers that left in the list are primes.
- If $f(n) = a_k n^k + a_{k-1} n^{k-1} + \cdots + a_2 n^2 + a_1 n + a_0$ is a polynomial function with integer coefficients and if r is such that $f(r) \equiv 0 \pmod{p}$ for some p, then $f(r + mp) \equiv f(r) \equiv 0 \pmod{p}$ for all $m \in N$. That is, no polynomial can have only prime values. Euler observed that the polynomial n^2+n+41 gives distinct primes for integers n = 0, 1, 2, . . . , 39. He gave this in his 1772. This is called a prime generating polynomial.
- Hardy and Littlewood conjectured that $\pi(x + y) \leq \pi(x) + \pi(y)$ for all $x, y \geq 2$. i.e. no interval $(y, x + y]$ contains more primes than the initial interval (0,x].
- Dirichlet's Theorem. For positive integers a and b, where (a, b) = 1, there are infinitely many primes of the form an+b, where n is a positive integer. That is, there are infinitely many primes that are congruent to b modulo a.
- Bertrand gives a theorem that for all integers $n \geq 2$, there is a prime p such that $n < p < 2n$.



Present Study

Prime counting functions: The numbers of primes less than a given integer n is defined as the prime counting function and denoted by $\pi(n)$.

Prime Number Theorem:

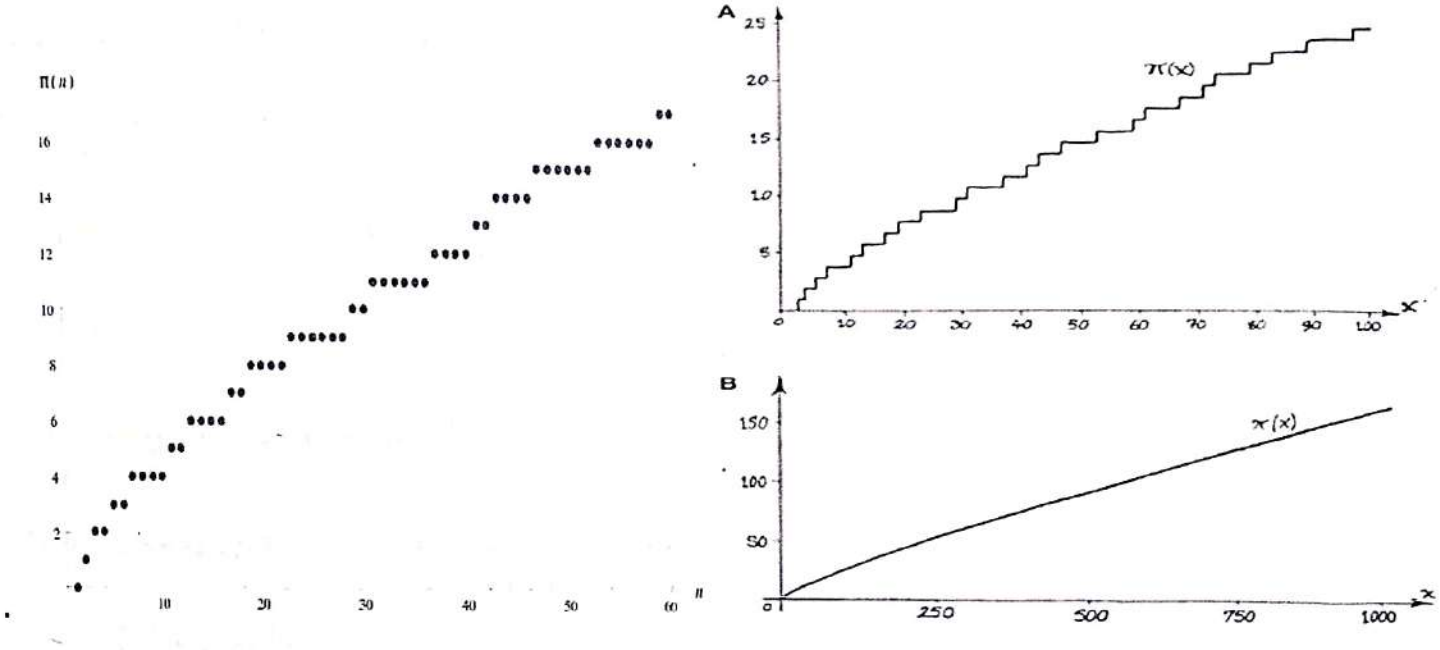
Statement: Prime number theorem states that $\lim_{n\to\infty} \frac{\pi(x)}{x/\log x}$ =1. Where log x denotes the natural logarithm. In other words, the Prime Number theorem states that $\pi(x) = \frac{x}{\log x} +$ $o(\frac{x}{\log x})$ as $x \to \infty$, where o(f) stands for a function g with the property $\lim_{x\to\infty} \left(\frac{f}{g}\right) = 0$. The theorem is known as the asymptotic law of distribution of prime numbers. Using asymptotic notation we can write $\pi(x) \sim \frac{x}{\log x}$. The prime number theorem is equivalent to

$$\lim_{x\to\infty} \frac{\vartheta(x)}{x} = \lim_{x\to\infty} \frac{\psi(x)}{x} = 1.$$

Where ϑ and ψ are the first and the second Chebyshev functions respectively. In March 1948, Atle Selberg established, by "elementary" means, the asymptotic formula

The first proof of the Prime Number Theorem was given by Jacques Hadamard, and by Charles-Jean de la Vall ee Poussin in 1896. The proof was not elementary and made use of the functional equations for the Riemann Zeta Function ζ(s) and other properties of ζ(s) that were conjectured by Riemann and proved by Hadamard, Hadamard's theorem of entire functions.

This theorem was conjectured independently by Legendre and Gauss. Legendre conjectured in 1798 that $\pi(x) = \frac{x}{A\,logx+B}$. Later he conjectured A = 1 and B = −1.08366. Now I will show how $\pi(x)$ changes as $x \to \infty$.



Connection to the Riemann's Zeta function:

The Riemann's Zeta function, denoted by ζ(s), is a mathematical function that plays a important role in number theory. It is defined for complex numbers s with real part greater than 1 as: $\zeta(s) = \frac{1}{1^s} + \frac{1}{2^s} + \frac{1}{3^s} + \ldots$

In particular, The Riemann's Zeta function is closely related to the distribution of Prime numbers through the celebrated Riemann's hypothesis, which remains a unsolved problem in mathematics. The Riemann's hypothesis states that all non-trivial zeros of Zeta function lie on a specific line in the complex plane called the critical line, which has the equation Re(s)=1/2.

The connection is derived from the relation of the Euler's product formula which is if Re(s)>1, then $\zeta(s) \neq 0$ and $\zeta(s) = \prod_p (1 - \frac{1}{p^s})^{-1}$.

Chebyshev's theorem:

Theorem: Let N be any positive integer greater than or equal to 1. Then $\pi(x)$ has the following upper and lower bound: $0.1\frac{N}{\log N} < \pi(N) < 4\frac{N}{\log N}$. ..... (1)

Proof:

Given two numbers a and b, the binomial theorem states that

$$\sum_{k=0}^{n} \binom{n}{k} a^n b^{n-k} = (a+b)^n$$

Substituting 2n for n, and setting both a and b equal to 1, then we have

$$\sum_{k=0}^{2n} \binom{2n}{k} 1^{2n-k}1^k = 1+\binom{2n}{2} + \binom{2n}{3} + \ldots + \binom{2n}{n} + \ldots + \binom{2n}{2n-1} + 1 = (1+1)^{2n} = 2^{2n}.$$

It is clear that It is clear that $\binom{2n}{k}$>0 for any k, thus by rearranging, we can see that

$$\binom{2n}{n} < 2^{2n} \quad \text{..... (2)}$$

We can easily verify that $\frac{2n-k}{n-k} > 2$.

Next we expand the combination $\binom{2n}{n}$ we get

$$\binom{2n}{n} = \frac{(2n)!}{n!^2}$$

$$= \frac{2n.(2n-1).(2n-2)\ldots(2n-(n-1)).(2n-1)!}{n!^2}$$

$$= \frac{2n.(2n-1).(2n-2)\ldots(n+1)}{n!}$$

$$\geq 2^n \quad \text{..... (3)}$$

Hence we obtain the following expression $2^n \leq \binom{2n}{n} \leq 2^{2n}$. ..... (4)

Now $\binom{2n}{n} = \frac{(2n)!}{n!^2}$ follows it contain the following

$$\frac{p^{\left[\frac{2n}{p}\right]+\left[\frac{2n}{p^2}\right]+\ldots+\left[\frac{2n}{p^q}\right]}}{\left(p^{\left[\frac{n}{p}\right]+\left[\frac{n}{p^2}\right]+\ldots+\left[\frac{n}{p^q}\right]}\right)^2}$$

$$= \frac{p^{\left[\frac{2n}{p}\right]+\left[\frac{2n}{p^2}\right]+\ldots+\left[\frac{2n}{p^q}\right]}}{p^{2\left(\left[\frac{n}{p}\right]+\left[\frac{n}{p^2}\right]+\ldots+\left[\frac{n}{p^q}\right]\right)}}$$

$$= p^{\left(\left[\frac{2n}{p}\right]+\left[\frac{2n}{p^2}\right]+\ldots+\left[\frac{2n}{p^q}\right]\right)-2\left(\left[\frac{n}{p}\right]+\left[\frac{n}{p^2}\right]+\ldots+\left[\frac{n}{p^q}\right]\right)}$$

$$= p^{\left(\left[\frac{2n}{p}\right]-2\left[\frac{n}{p}\right]\right)+\left(\left[\frac{2n}{p^2}\right]-2\left[\frac{n}{p^2}\right]\right)+\ldots+\left(\left[\frac{2n}{p^q}\right]-2\left[\frac{n}{p^q}\right]\right)} \quad \ldots\ldots\ldots\ldots (5)$$

with p a prime less than or equal to 2n and q the largest integer such that $p^q \leq 2n$.

$$\text{Now } 2\left[\frac{a}{2}\right] = \begin{cases} [a] \ if \ \frac{a}{2} - \left[\frac{a}{2}\right] < 1/2 \\ [a] - 1 \ if \ \frac{a}{2} - \left[\frac{a}{2}\right] \geq 1/2 \end{cases} \quad \ldots\ldots\ldots\ldots (6)$$

We can easily see that $a - 2\left[\frac{a}{2}\right] \leq 1 \ for \ all \ a.$ ..... (7)

Returning to the following expression, $p^{\left(\left[\frac{2n}{p}\right]-2\left[\frac{n}{p}\right]\right)+\left(\left[\frac{2n}{p^2}\right]-2\left[\frac{n}{p^2}\right]\right)+\ldots+\left(\left[\frac{2n}{p^q}\right]-2\left[\frac{n}{p^q}\right]\right)}$, if we set a=2n/p in previous equation then a/2=n/p.

This can therefore be used to show that

$$\left(\left[\frac{2n}{p}\right]-2\left[\frac{n}{p}\right]\right)+\left(\left[\frac{2n}{p^2}\right]-2\left[\frac{n}{p^2}\right]\right)+\ldots+\left(\left[\frac{2n}{p^q}\right]-2\left[\frac{n}{p^q}\right]\right) \leq 1+1+..+1 = q.$$

Now, if we denote by pi the prime numbers in the prime factorization of $\binom{2n}{n}$ then we can see that each p_i will have a power less than or equal to q_i, where $p_i^{q_i} \leq 2n$.

Now $\binom{2n}{n} \leq (2n)^r$. Since there are r many primes less than or equal to 2n, we can set $r=\pi(2n)$. This means that $\binom{2n}{n} \leq (2n)^{\pi(2n)}$.

Now, we will take a look back at the following expression:

$$\binom{2n}{n} = \frac{2n.(2n-1)\ldots(n+1)}{n(n-1)\ldots 1}$$

We will take all the primes that divide $\binom{2n}{n}$, and put them into two groups. First of all, we denote the primes that divide $\binom{2n}{n}$ by $p_1, p_2, \ldots p_s p_1, , p_{s+1}, \ldots, p_r$. We will make our first group of primes all the primes less than or equal to n, and they will be the primes $p_1, p_2, \ldots p_s$. Our second group of primes will consist of all the primes greater than n but less than or equal to 2n and they will be the remaining primes; $p_{s+1}, \ldots, p_r$. Clearly, the product of all of the primes in our second group divides $\binom{2n}{n} = \frac{(2n)!}{n!^2}$ since they appear in the numerator only.

Thus

$$\binom{2n}{n} \geq p_{s+1}, \ldots, p_r > n.n.n \ldots n = n^{r-s}$$

Now since p_1 up to p_s consist of s many primes, and p1 to pr consist of r many primes, then it is clear that the amount of primes from p_{s+1} to is p_r exactly equal to r- s. We may also note that the primes $p_1$up to p_s are all less than or equal to n as defined above, which by definition means that there are exactly $\pi(n)$ *we* obtain the following expression: of them. By setting s= $\pi(n)$, we obtain the following expression:

$n^{r-s} < \binom{2n}{n} \leq (2n)^{\pi(2n)}$ Which implies $n^{\pi(2n)-\pi(n)} < \binom{2n}{n} \leq (2n)^{\pi(2n)}$ .....(8)

By comparing (5) with the above result, we see that $2^n \leq \binom{2n}{n} \leq (2n)^{\pi(2n)}$ which implies $2^n \leq (2n)^{\pi(2n)}$. Taking the logarithm of both sides, we find that

$$\log 2^n \leq \log (2n)^{\pi(2n)}$$

$$n.\log(2) \leq \pi(2n).\log 2n$$

$$\frac{n.\log(2)}{\log(2n)} \leq \pi(2n)$$

$$\frac{2n.\log(2)}{\log(2n).2} \leq \pi(2n)$$

$$\frac{2n}{\log(2n)}(0.1505149\ldots) \leq \pi(2n)$$

Therefore for any even number N = 2n, we have shown the first half of the desired inequality. For N odd, we can use a similar argument to satisfy the inequality. We first claim that $2n \geq \frac{2}{3}(2n+1)$ for all $n \geq 1$. Clearly $6n \geq 2(2n+1) = 4n+2$. Collecting like terms we find that $2n \geq 2$, which is equivalent to $n \geq 1$. Now, using this fact, we take any odd N =

2n+1 we know from above that $n.\log(2) \leq \pi(2n).\log(2n)$. We can use this to show the following:

$$n.\log(2) \leq \pi(2n).\log(2n) \leq \pi(2n+1).\log(2n+1)$$

$$\frac{2}{3}(2n+1).\frac{\log(2)}{2} \leq 2n.\frac{\log(2)}{2} \leq \pi(2n+1).\log(2n+1)$$

$$\frac{(2n+1)}{\log(2n+1)}.\frac{2}{3}.\frac{\log(2)}{2} \leq \pi(2n+1)$$

$$\frac{(2n+1)}{\log(2n+1)}.(0.1003433..) \leq \pi(2n+1)$$

Since for any even N we have $\frac{N}{\log(N)}(0.1505149\ldots) \leq \pi(N)$, then we can conclude that fo all N> 1,

$$\frac{N}{\log(N)}(0.1505149\ldots) \leq \pi(N) \qquad \ldots\ldots\ldots\ldots\ldots\ldots(9)$$

We now begin the proof of the second half of the desired inequality. We find that

$$\log\left(n^{\pi(2n)-\pi(n)}\right) < \log(2^{2n})$$

$$(\pi(2n)-\pi(n)).\log n < 2n.\log 2$$

$$\pi(2n)-\pi(n) = (0.60206).\frac{n}{\log n}.$$

We now suppose that x >1, for x € the set of real numbers. Setting n=$\left[\frac{x}{2}\right]$ we find that [x]= 2n+1.

We now observe two results. The first result is that $\pi(x) \leq \pi(2n)+1$. The second result is that $\pi\left(\frac{x}{2}\right) = \pi(n)$, as n=$\left[\frac{x}{2}\right]$. From these two results, we obtain the following expression:

$$\pi(x)-\pi\left(\frac{x}{2}\right) \leq \pi(2n)+1-\pi(n)$$

$$< 2.\log 2\,.\frac{n}{\log(n)}+1$$

$$= (1.60206).\frac{n}{\log(n)}$$

Now, Since n=$\left[\frac{x}{2}\right]$, then for $\left[\frac{x}{2}\right] \geq 3$,

$$\pi(x) - \pi\left(\frac{x}{2}\right) < (2.\log(2) + 1).\frac{x}{\log(x)}$$

We can also show that the above inequality holds for $\left[\frac{x}{2}\right] < 3$. First, if $\left[\frac{x}{2}\right] < 3$, this is equivalent to saying $x < 6$. But we know for any x <10, then log x < 1, so clearly for all x>1,

$$\pi(x) - \pi\left(\frac{x}{2}\right) < \pi(x) < x < \frac{x}{\log x} < (2.\log(2) + 1).\frac{x}{\log(x)}$$

We now look at the following inequality:

$$\pi(x).\log(x) - \pi\left(\frac{x}{2}\right)\log\frac{x}{2}$$

$$\left[\pi(x) - \pi\left(\frac{x}{2}\right)\right].\log x + \pi\left(\frac{x}{2}\right).[\log x - \log\frac{x}{2}]$$

$$< (2.\log 2 + 1).x + \frac{x}{2}.\log 2$$

$$= (1.75257).x$$

Now, taking N to be any arbitrary positive integer, from above we obtain the following set of inequalities:

$\pi(N).\log(N) - \pi\left(\frac{N}{2}\right)\log\frac{N}{2} < (1.75257....).N,$

$\pi(N/2).\log(N/2) - \pi\left(\frac{N}{4}\right)\log\frac{N}{4} < (1.75257....).\frac{N}{2},$.....

$, \pi\left(\frac{N}{2^{k-1}}\right).\log\left(\frac{N}{2^{k-1}}\right) - \pi\left(\frac{N}{2^k}\right)\log\frac{N}{2^k} < (1.75257....).\frac{N}{2^{k-1}}.$

We now choose k so that $2^k > N$. Adding all the inequalities from the previous step, we obtain the following:

$$\pi(N).\log(N) - \pi\left(\frac{N}{2}\right)\log\frac{N}{2} + \pi\left(\frac{N}{2}\right).\log\left(\frac{N}{2}\right) - \pi\left(\frac{N}{4}\right)\log\frac{N}{4} + \ldots +$$
$$\pi\left(\frac{N}{2^{k-2}}\right).\log\left(\frac{N}{2^{k-2}}\right) - \pi\left(\frac{N}{2^{k-1}}\right)\log\frac{N}{2^{k-1}} + \pi\left(\frac{N}{2^{k-1}}\right).\log\left(\frac{N}{2^{k-1}}\right) - \pi\left(\frac{N}{2^k}\right)\log\frac{N}{2^k}$$

$$< (1.75257....).N + (1.75257....).\frac{N}{2} + \ldots + (1.75257....).\frac{N}{2^{k-1}}$$
$$= (1.75257....)(N + \frac{N}{2} + \ldots + \frac{N}{2^{k-1}})$$

The above expression can simplify to

$\pi(N)\log(\mathrm{N}) - \pi\left(\frac{N}{2^k}\right)\log\frac{\mathrm{N}}{2^k} < (1.75257\ldots)(\mathrm{N} + \frac{N}{2} + \ldots + \frac{N}{2^{k-1}})$.

Now

$$\pi(N)\log(\mathrm{N}) - \pi\left(\frac{N}{2^k}\right)\log\frac{\mathrm{N}}{2^k} < (1.75257\ldots)\left(\frac{N-\frac{N}{2^k}}{1-\frac{1}{2}}\right)$$

$$= (3.50514)\left(N - \frac{N}{2^k}\right)$$

$$< (3.50514).\mathrm{N} < 4N$$

Using the fact that $0 < \frac{N}{2^k} < 1$. Setting $\pi\left(\frac{N}{2^k}\right) = 0$ due to the fact that $\frac{N}{2^k} < 1$, we can therefore conclude that

$$\pi(N)\log(\mathrm{N}) - \pi\left(\frac{N}{2^k}\right)\log\frac{\mathrm{N}}{2^k} < 4N$$

$$\pi(N)\log(\mathrm{N}) - 0.\log\frac{\mathrm{N}}{2^k} < 4N$$

$$\pi(N)\log(\mathrm{N}) < 4N$$

$$\pi(N) < 4.\frac{\mathrm{N}}{\log \mathrm{N}}$$

Comparing the above inequality with (9), we find that

$\frac{N}{\log(N)}(0.1505149\ldots) \leq \pi(N) < 4.\frac{N}{\log(N)}$, This completes the proof.

We can also complete this proof using the natural logarithm, as opposed to the logarithm of base 10. The proof remains the exact same, except for when computing values in certain parts of the proof. Instead of computing values using log base 10, we can use log base e, which is equivalent to ln. Computing these values, we find that (9) can be changed to

$$\frac{N}{\ln N}.(0.2310406) \leq \pi(N),$$

and the other side of the inequality can be changed to

$$\pi(N) < 6.\frac{N}{\ln N}$$

This implies that in terms of the natural logarithm, $\pi(N)$ can be approximated in the following way:

$$\frac{N}{\ln N}.(0.23) \leq \pi(N) < 6.\frac{N}{\ln N}$$

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Links

1. https://en.m.wikipedia.org/wiki/List_of_prime_numbers
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4. https://en.wikipedia.org/wiki/Prime_number_theorem

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Shreya Patra , a student of 6th semester, has successfully completed the project titled "IRREDUCIBLE POLYNOMIAL" under the guidance of Dr. Rima Barik from 15/05/2023 to 17/07/2023.

This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Shreya Patra for his hard work, dedication, and commitment to excellence.

Supervisor's Signature

HOD's Signature

Principal's Signature

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Sumanta Paine, a student of 6th semester, has successfully completed the project titled "PRIME NUMBERS AND IT'S DISTRIBUTION " under the guidance of Dr. Rima Barik from 15/05/2023 to 17/07/2023.

This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Sumanta Paine for his hard work, dedication, and commitment to excellence.

Supervisor's Signature

HOD's Signature

Principal's Signature

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Rajesh Mandal, a student of 6th semester, has successfully completed the project titled " Numerical Integration " under the guidance of Chandi Das Gop from 15/05/2023 to 17/07/2023. This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Rajesh Mandal for his hard work, dedication, and commitment to excellence.

Supervisor's Signature

HOD's Signature

Principal's Signature

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Subrata Pujaru, a student of 6th semester, has successfully completed the project titled "WILSON THEOREM " under the guidance of Madhab Kr. Nandi from 15/05/2023 to 17/07/2023.

This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Subrata Pujaru for his hard work, dedication, and commitment to excellence.

Madhab Kr. Nandi

Supervisor's Signature

HOD's Signature

Principal's Signature

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Punam Rakshit, a student of 6th semester, has successfully completed the project titled "ASSIGNMENT PROBLEM " under the guidance of Dr MD. Asif Ikbal from 15/05/2023 to 17/07/2023.

This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Punam Rakshit for his hard work, dedication, and commitment to excellence.

Supervisor's Signature

HOD's Signature

Principal's Signature

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Dinabandhu Das , a student of 6th semester, has successfully completed the project titled " RELATION BETWEEN INCOME AND EDUCATION IN GRAPHICAL METHOD " under the guidance of Chandi Das Gop from 15/05/2023 to 17/07/2023.

This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Dinabandhu Das for his hard work, dedication, and commitment to excellence.

Supervisor's Signature

HOD's Signature

Principal's Signature

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Dayamoy Konar, a student of 6th semester, has successfully completed the project titled "A study on Simple Group" under the guidance of Madhab Kr. Nandi from 15/05/2023 to 17/07/2023. This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Dayamoy Konar for his hard work, dedication, and commitment to excellence.

Madhab Kr. Nandi

Supervisor's Signature

HOD's Signature

Principal's Signature

Khatra Adibasi Mahavidyalaya

Department of Mathematics

Certificate of Project Completion

This is to certify that Rakhi Mondal, a student of 6th semester, has successfully completed the project titled "TRANSPOTATION PROBLEMS " under the guidance of Dr MD. Asif Ikbal from 15/05/2023 to 17/07/2023.

This project work (Course code- SH/MTH/604/DSE-4) has been evaluated and found to meet the requirements and standards set by the Department of Mathematics throughout the 6th semester in academic year 2022-23.

We commend Rakhi Mondal for his hard work, dedication, and commitment to excellence.

Supervisor's Signature

HOD's Signature

Principal's Signature

KHATRA ADIBASI MAHAVIDYALAYA

DEPARTMENT OF MUSIC

(FIELD WORK 2022-23)

STAGE DEMONSTRATION OF SONG

PAPERCODE: AP/MUS/504/SEC-3

AP/MUS/604/SEC-4

UNDER THE GUIDANCE OF

- SMT. SANGITA SARKAR (DEY)
- SANJIB KUMAR DUTTA

Khatra Adibasi Mahavidyalaya ✡ Khatra, Bankura ✡ Estd.-1979

Sangita Sarkar (Dey)
Head
Department of Music
Khatra Adibasi Mahavidyalaya

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Bankura

To
The Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura, West Bengal

Subject: Request for Permission to Conduct **"Stage Demonstration of Song" Under Music Course (Field Work), Paper code: AP/MUS/504/SEC-3 & AP/MUS/604/SEC-4**

Respected Sir/Madam,

I am writing to seek your kind permission to conduct two 1-week field-work on **"Stage Demonstration of Song"** as the outcome of semester-long field works associated with **Music Course, Paper code: AP/MUS/504/SEC-3 & AP/MUS/604/SEC-4**, for 5th and 6th semester students as mentioned in the curriculum prescribed by Bankura University. The execution based on the Field-Study and reporting has been settled from departmental meeting and will be better to be scheduled from 23.03.2023 to 29.03.2023 and 10.05.2023 to 16.05.2023 for stage performance in the programmes BASANTA UTSAV (2022-23) and RABINDRA-NAZRUL JANMA JAYANTI (2022-23) respectively. This project is crucial for the practical understanding and application of the theoretical knowledge gained during their studies.

I assure you that I will adhere to all the guidelines and regulations of the college during this project/field work. I will also ensure that this work will not disrupt other regular activities of the college or the college-ground involved.

I kindly request you to grant me the necessary permission to undertake this field work. I am confident that this experience will significantly contribute to the academic and professional growth of the students.

Thank you for considering my request. I look forward to your positive response.

Yours sincerely,

Sangita Sarkar (Dey). 16.03.2023.
[Smt. Sangita Sarkar (Dey)]
Senior Faculty & Head,
Department of Music
Khatra Adibasi Mahavidyalaya

Allowed
23/3/2023

Sangita Sarkar (Dey).
Head 16.03.2023.
Department of Music
Khatra Adibasi Mahavidyalaya
Departmental seal

Report: "Stage Demonstration of Song" Under Music Course (Field Work)

Paper code: AP/MUS/504/SEC-3
AP/MUS/604/SEC-4

Introduction:

Music is a universal language that transcends cultural and linguistic barriers. In an academic context, particularly within a music course, stage demonstrations of songs are crucial for students to showcase their talents, understand the practical aspects of performance, and receive constructive feedback. This essay explores the course outcome and programme outcome of stage demonstrations, the aims and importance of such activities, the requirements for a performer, and the challenges of performing on a big stage along with potential solutions.

Course Outcome and Programme Outcome:

Course Outcome:

1. **Practical Skills:** Students will gain hands-on experience in performing music live, enhancing their technical and expressive abilities.
2. **Stage Presence:** Students will learn to manage stage fright and develop a confident stage presence.
3. **Feedback Integration:** Students will receive real-time feedback from peers and instructors, helping them refine their performance skills.
4. **Audience Engagement:** Students will understand how to engage and connect with an audience, an essential skill for any performer.

Programme Outcome:

1. **Professional Preparedness:** Graduates will be prepared for careers in music performance, education, or related fields.
2. **Comprehensive Musicianship:** Students will develop a well-rounded understanding of music theory, history, and performance practices.
3. **Collaborative Skills:** Students will learn to work effectively in ensembles, demonstrating teamwork and communication skills.
4. **Cultural Appreciation:** Students will gain an appreciation for diverse musical traditions and the ability to perform a wide range of repertoire.

Aim and Importance

The primary aim of a stage demonstration of song within a music course is to bridge the gap between theoretical knowledge and practical application. By performing on stage, students experience the nuances of live performance that cannot be replicated in a classroom setting.

Importance:

1. **Real-world Experience:** Stage demonstrations provide students with a taste of professional performance scenarios, preparing them for future careers.
2. **Skill Enhancement:** Through continuous practice and performance, students can refine their vocal techniques, interpretive skills, and overall musicianship.
3. **Confidence Building:** Regular performances help students overcome stage fright and build self-confidence.
4. **Critical Feedback:** Constructive criticism from instructors and peers is invaluable for personal and professional growth.
5. **Audience Interaction:** Learning to engage with an audience is a critical aspect of performance, helping students become more dynamic and compelling performers.

Requirements for a Performer

To excel in a stage demonstration, a performer must meet several requirements:

1. **Technical Proficiency:** Mastery of vocal techniques and the ability to deliver a polished performance.
2. **Repertoire Knowledge:** Familiarity with the chosen pieces, including their historical context and stylistic nuances.
3. **Emotional Expressiveness:** The ability to convey the emotional content of the song, making a connection with the audience.
4. **Stage Etiquette:** Understanding of proper stage conduct, including entrances, exits, and interactions with other performers and the audience.
5. **Physical Stamina:** Performance can be physically demanding; maintaining good health and physical conditioning is essential.
6. **Mental Preparation:** Developing strategies to manage performance anxiety and maintain focus during the performance.

Big Stage Problems and Solutions

Performing on a big stage presents unique challenges that require careful consideration and preparation.

Problems:

1. **Stage Fright:** The fear of performing in front of a large audience can be debilitating.
2. **Acoustics:** Large venues often have challenging acoustics that can affect sound quality.
3. **Technical Issues:** Problems with microphones, sound systems, or other technical aspects can disrupt a performance.
4. **Visibility:** The size of the stage and distance from the audience can make it difficult to establish a connection.
5. **Logistics:** Coordinating with stage managers, lighting technicians, and other staff can be complex.

Solutions:

1. **Practice and Preparation:** Regular practice and mock performances can help reduce anxiety. Visualization techniques and breathing exercises can also be beneficial.

2. **Sound Checks:** Conduct thorough sound checks to understand the acoustics of the venue and make necessary adjustments.
3. **Technical Familiarity:** Familiarize yourself with the technical equipment and have backup plans in place for potential issues.
4. **Stage Movement:** Use the space effectively by moving around the stage and using gestures to reach the entire audience.
5. **Communication:** Establish clear communication with all involved personnel to ensure smooth logistical coordination.

Conclusion

Stage demonstrations of songs within a music course are integral to developing well-rounded, skilled, and confident performers. By understanding the course and programme outcomes, recognizing the importance of these demonstrations, and addressing the challenges of performing on a big stage, students can effectively prepare for successful careers in music. The combination of technical proficiency, emotional expressiveness, and practical experience gained through stage demonstrations equips students with the essential tools needed to thrive in the world of music performance.

Activities Report on Stage Demonstration of Spring Festival (Basanta Utsav)

Date: March 29, 2023
Venue: College Campus, Khatra Adibasi Mahavidyalaya

Introduction:

The Spring Festival, also known as Basanta Utsav, was celebrated with great enthusiasm at Khatra Adibasi Mahavidyalaya on March 29, 2023. The event, held on the college campus, showcased a variety of cultural performances with stage demonstrations and activities that highlighted the vibrant traditions and artistic talents of the students and faculty.

Objectives:

- To celebrate the arrival of spring.
- To provide a platform for students to showcase their talents.
- To promote cultural heritage and traditional art forms.

Activities and Performances:

1. **Inauguration Ceremony:**
   - The event commenced with a traditional lamp lighting ceremony by the Principal and esteemed guests.
   - A welcome speech was delivered by the Principal, emphasizing the importance of cultural celebrations in educational institutions.
2. **Cultural Performances:**
   - **Dance Performances:** The students performed traditional dances, including Rabindra Nritya, celebrating the poetry and songs of Rabindranath Tagore and folk dances from various regions our locality.

- **Music:** There were soulful renditions of classical and folk songs, including Jhumur, Baul, Tagore Songs & Nazrul Songs, performed by the college choir (Department of Music) and individual students.

3. **Stage decoration:**
   - A Stage decoration with traditional art and craft of Bankura was set up
4. **Traditional Santali Dance Demonstration:**

   As part of the Spring Festival (Basanta Utsav) celebrations at Khatra Adibasi Mahavidyalaya, a special demonstration of Santali tribal dances, including the Baha and Sarhul dances, was organized on March 29, 2023. This event aimed to highlight the rich cultural traditions of the Santali community and provide a platform for showcasing their vibrant dance forms. Our aim was to celebrate and promote the cultural heritage of the Santali community, to provide students and attendees with an understanding of tribal traditions and customs & to foster a sense of pride and appreciation for indigenous art forms.

5. **Closing Ceremony:**
   - The event concluded with a vote of thanks by Dr. Parthasarothi Hati, Associate Professor, Department of Bengali, Department of Music & Cultural Committee (Khatra Adibasi Mahavidyalaya), expressing gratitude to all participants, faculty members, and students for their contributions.
   - A farewell song marked the end of the celebrations, leaving the audience with a sense of joy and festivity.

A descriptive report on the Spring Festival (**Basanta Utsab**) has been attached in vernacular language (Bengali) form.

Khatra Adibasi Mahavidyalaya Estd-1979 Khatra, Bankura

P.T.O

বসন্ত উৎসব ও তার প্রাসঙ্গিকতা

বাঙালির বারো মাসে তেরো পার্বন; আর এই তেরো পার্বন শেষ হয় 'বসন্ত উৎসবের' মাধ্যমে। বহু সময় ধরে বাঙালীরা এই উৎসব পালন করে আসছে। বসন্ত মানেই ফুলে ফুলে সজ্জিত প্রকৃতি। এই ঋতুরাজ বসন্ত বাঙালীদের মনে রং এর ছোঁয়া লাগে। আনন্দে মেতে ওঠে সকলে একে হোলি বা দোল উৎসবও বলা হয়।

হোলি রঙের উৎসব; যা ফাল্গুন মাসের পূর্ণিমা তিথিতে উদযাপিত হয়। আর - এটি বসন্তে পালিত হওয়ার কারণে এর আরেক নাম 'বসন্ত উৎসব'। হোলি বা দোল উৎসব পালনের পিছনে বেশ কিছু পৌরাণিক কাহিনী রয়েছে।

বৃন্দাবনে আবির ও গুলাল নিয়ে শ্রীকৃষ্ণ রাধা এবং তার সখীদের সঙ্গে হোলি খেলেছিলেন। সেই থেকে উৎপত্তি হয় দোল খেলার।
তাই, এই দিনের পূজিত দেব দেবী হল রাধা-কৃষ্ণ। বসন্তকে স্বাগত জানিয়ে বাঙালিরা আবির খেলায় মেতে ওঠে।

এছাড়াও হোলি খেলার কারন হিসাবে যে পৌরাণিক কাহিনী অধিক প্রচলিত তা হল হোলিকা দহন।

খাতড়া আদিবাসী মহাবিদ্যালয়ের
বসন্ত উৎসব উদযাপন

প্রতি বছর বসন্তের এই দিনটিতে অকালে আবির মেলায় মেতে ওঠে। দীর্ঘকাল ধরে এই ধারা চলে আসছে। ঠিক তেমনি আমাদের খাতড়া আদিবাসী মহাবিদ্যালয়ে এই উৎসব অত্যন্ত জাকজমকের সাথে পালন করা হয়। সকল শিক্ষিকা ও শিক্ষিকা শিক্ষাকা মিলিতভাবে এই দিনটিকে পালন করে থাকেন।

সারা মহাবিদ্যালয় জুড়ে যেন রঙের ও খুশীর আমেজ বয়ে যায় সকলের মনে। প্রত্যেকে এই দিনটিতে কলেজে আসে, মেয়েরা সাদা পাঞ্জাবি ও মেয়েরা হলুদ শাড়ি পরে উৎসবে অংশগ্রহন করে। সকলে মিলে প্রভাতফেরী করা হয়। সাথে থাকে ডাক্তিয়া নাচ, রঙ্গ খেলা। এই প্রভাতফেরী সকলে চারিদিকে রঙ্গ ছড়ায়, এবং হাঁটতে হাঁটতে সকলের মুখ থেকে ধ্বনিত হয় এক অপূর্ব সংগীত —

"ওরে গৃহবাসী, খোল দ্বার খোল
লাগলো যে দোল",

প্রভাতফেরীর পর আমাদের কলেজের ছাত্র ছাত্রীরা গান, নাচ, কবিতা প্রভৃতি উপস্থাপনা করে। এবং সব শেষে আমাদের কলেজের আদিবাসী নৃত্য দিয়ে অনুষ্ঠান সুসম্পন্ন হয়।


বসন্ত উৎসব
১৪২৯
আয়োজনে:
খাতড়া আদিবাসী মহাবিদ্যালয়
খাতড়া :: বাঁকুড়া


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Impact and Feedback:

- The event was well-received by students, faculty, and guests, who appreciated the efforts put in by the organizers.
- It fostered a sense of community and cultural pride among the participants.
- The performances and activities provided a refreshing break from academic routines, enhancing the overall college experience.

Conclusion:

The Basanta Utsav celebration at Khatra Adibasi Mahavidyalaya was a resounding success, reflecting the rich cultural heritage and creative spirit of the college community. The event not only celebrated the arrival of spring but also served as a platform for students to express their artistic talents and cultural values.

Activities Report on Stage Demonstration of Rabindra-Nazrul Janma Jayanti

Date: May 16, 2023
Venue: College Campus, Khatra Adibasi Mahavidyalaya

Introduction:

Khatra Adibasi Mahavidyalaya celebrated Rabindra-Nazrul Janma Jayanti on May 16, 2023, to honour the birthdays of two illustrious literary figures, Rabindranath Tagore and Kazi Nazrul Islam. This event aimed to recognize their monumental contributions to literature, music, and culture, and to inspire the students by connecting them with the rich cultural heritage of Bengal through stage performance.

Objectives:

- To celebrate the birthdays of Rabindranath Tagore and Kazi Nazrul Islam.
- To provide a platform for students to exhibit their talents in literature, music, and dance to face challenges of performing on a stage.
- To deepen the appreciation of Bengali cultural heritage among the college community.

Activities and Performances:

1. **Inauguration Ceremony:**
   - The event commenced with the ceremonial lighting of the lamp by the Principal and other dignitaries as usual.
   - A floral tribute was offered to the portraits of Rabindranath Tagore and Kazi Nazrul Islam, followed by an introductory speech by Principal Prof. (Dr.) Nityananda Patra emphasizing their significant contributions to Bengali literature and culture.
2. **Literary Readings:**
   - Students recited poems and passages from the works of Tagore and Nazrul, capturing the essence and beauty of their literary creations.
   - Faculty members also participated, sharing their interpretations and reflections on the profound impact these poets have had on literature and society.

3. **Music Performances:**
   - The college choir performed a medley of Rabindra Sangeet (songs by Tagore) and Nazrul Geeti (songs by Nazrul), showcasing the timeless appeal and emotional depth of their music.
   - Solo performances by students included iconic songs like "Ekla Cholo Re" by Tagore and "Firiya Jodi Se Ase" by Nazrul, mesmerizing the audience with their vocal prowess and emotive delivery.
4. **Dance Performances:**
   - A series of dance performances were choreographed to the tunes of Rabindra Sangeet and Nazrul Geeti, highlighting the fusion of classical and folk elements inherent in their compositions.
   - The dances depicted themes of love, patriotism, and spirituality, resonating with the universal messages conveyed in the works of Tagore and Nazrul.
5. **Closing Ceremony:**
   - The event concluded with a vote of thanks by the Dr. Parthasarothi Hati, Associate Professor, Department of Bengali & Mrs. Sangita Sarkar (Dey), Faculty, Department of Music of this college & Convener Cultural Sub-Committee, expressing gratitude to all participants, organizers, and attendees for their support and contributions.
   - A farewell song, blending the musical styles of both poets, marked the end of the celebrations, leaving a lasting impression on everyone present.

A descriptive report on **Rabindra-Nazrul Janma Jayanti** has been attached in vernacular language (Bengali) form.

P.T.O

নজরুল জয়ন্তী ও রবীন্দ্র জয়ন্তী ও তার প্রাসঙ্গিকতা

রবীন্দ্রজয়ন্তী:-

'রবীন্দ্রজয়ন্তী' বা 'পঁচিশে বৈশাখ' বাঙালি জাতির একটি অন্যতম গুরুত্বপূর্ণ সাংস্কৃতিক উৎসব। বাংলা পঞ্জিকা অনুসারে, প্রতি বছর বৈশাখ মাসের ২৫ তারিখে রবীন্দ্রনাথ ঠাকুরের জন্মজয়ন্তী উপলক্ষে এই উৎসব পালিত হয়।

রবীন্দ্রজয়ন্তী উৎসব উদযাপনের অঙ্গ হল রবীন্দ্রসংগীতানুষ্ঠান, নৃত্যানুষ্ঠান রবীন্দ্রনাট্যাভিনয়, রবীন্দ্ররচনাপাঠ, আলোচনাসভার আয়োজন ও নানাবিধ সাংস্কৃতিক অনুষ্ঠান। রবীন্দ্রসংগীতবিজড়িত বেতনগুলিতে এই সময় বিশেষ জলসমাজম দেখা যায়।

নজরুল জয়ন্তী:-

'নজরুল জয়ন্তী' ২৪ শে পালিত বাঙালি কবি কাজী নজরুল ইসলামের জন্মদিন। নজরুল ও তার কাজের প্রতি শ্রদ্ধা জানাতে দিনটি বিভিন্ন বিদ্যালয়, কলেজ ও বিশ্ববিদ্যালয়ে উদযাপন করা হয়।

বিশ্বজুড়ে বাঙালিরাও এই দিনটি উদযাপন করেন। নজরুলজয়ন্তী উপলক্ষে বিভিন্ন সামাজিক - সাংস্কৃতিক সংগঠন, রাজনৈতিক দল ও বিভিন্ন শ্রেণীপেশার সংগঠন বিভিন্ন কর্মসূচি নেয়।

খাতড়া আদিবাসী মহাবিদ্যালয়ের
নজরুল ও রবীন্দ্র জয়ন্তী উদযাপন

এই দিনটিতে আমাদের কলেজে 'রবীন্দ্র' ও 'নজরুল জয়ন্তী' একসাথে পালন করা হয়। 'রবীন্দ্র ও নজরুল জয়ন্তী' উপলক্ষে এক সুন্দর অনুষ্ঠানের আয়োজন করা হয়। সর্বপ্রথম কবি গুরু রবীন্দ্রনাথ ও বিদ্রোহী কবি নজরুল ইসলামের ছবিতে ফুল দিয়ে শ্রদ্ধাঞ্জলী জানান আমাদের প্রধান অধ্যক্ষ ড: নিত্যানন্দ পাত্র মহাশয়।

আমাদের প্রধান অধ্যক্ষ মহাশয় বক্তিতার মাধ্যমে অনুষ্ঠানটির শুভারম্ভ করেন। এরপর আমাদের কলেজের 'সংগীত বিভাগের' সমস্ত ছাত্রছাত্রীরা এবং অন্যান্য বিভাগের ছাত্রছাত্রীরা নাচ, গান, কবিতা, নাটক ইত্যাদির মাধ্যমে শিক্ষক শিক্ষিকাদের মনরঞ্জন করেন।

অধ্যাপক ও অধ্যাপিকারা তাদের গান পরিবেশন করে অনুষ্ঠানটিকে মাধুর্যময় করে তোলে। এবং তাদের এই সুন্দর গান, বক্তিতার মধ্য দিয়ে আমাদের কলেজের অনুষ্ঠানটি শুভসমাপ্তি ঘটে।


খাতড়া আদিবাসী মহাবিদ্যালয়
রবীন্দ্র-নজরুল জন্মজয়ন্তী উপলক্ষ্যে
সঙ্গীত বিভাগ আয়োজিত
সাংস্কৃতিক অনুষ্ঠান
সহযোগিতায়- IQAC


রবীন্দ্র-নজরুল জন্মজয়ন্তী উপলক্ষ্যে
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BASANTA UTSAV (2022-23)

List of students participated in **"Stage Demonstration of Song" Under Music Course (Field Work) Paper code: AP/MUS/504/SEC-3 & AP/MUS/604/SEC-4**
at Spring Festival [BASANTA UTSAV (2022-23)] organized by the institution.

Sl. No.	Date of event/activity (DD-MM-YYYY)	Name of the event/activity	Name of the student participated
1	23.03.2023 to 29.03.2023	Songs (BOYS & GIRLS)	PUJA MUKHERJEE
2			PIU KARMAKAR
3			JHULAN HARI
4			ANINDITA SINGHA
5			RIYA NABIK
6			ROMIYA CHAKRABORTY
7			TRIPARNA MODAK
8			KOYEL MURMU
9			ASTAMI SAREN
10			ANUPAMA DUTTA
11			BUDDHADEB GHOSH

RABINDRA-NAZRUL JANMA JAYANTI (2022-23)

List of students participated in **"Stage Demonstration of Song" Under Music Course (Field Work) Paper code: AP/MUS/504/SEC-3 & AP/MUS/604/SEC-4**
at RABINDRA-NAZRUL JANMA JAYANTI (2022-23) organized by the institution.

Sl. No.	Date of event/activity (DD-MM-YYYY)	Name of the event/activity	Name of the student participated
1	10.05.2023 to 16.05.2023	Songs (BOYS & GIRLS)	ANWESHA MUI
2			TRIPARNA MODAK
3			KOYEL MURMU
4			ANINDITA SINGHA
5			JHULAN HARI

Impact and Feedback:

- The Rabindra-Nazrul Janma Jayanti celebration was a grand success, with students and faculty expressing their admiration for the well-curated performances and activities.
- The event provided an enriching cultural experience, deepening the participants' understanding and appreciation of Bengali literary and musical heritage.
- Positive feedback highlighted the event's role in inspiring students to explore and engage more deeply with the works of Tagore and Nazrul.

Conclusion:

The celebration of Rabindra-Nazrul Janma Jayanti at Khatra Adibasi Mahavidyalaya was a fitting tribute to the timeless legacies of Rabindranath Tagore and Kazi Nazrul Islam. Through a series of engaging performances and activities, the event successfully honored their contributions to literature and culture, inspiring all who attended to carry forward their rich heritage.

Khatra Adibasi Mahavidyalaya

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Website: www.khatraadibasimahavidyalaya.in
NAAC Accredited B+ (2nd Cycle)

Date. 17.05.2023.

Certificate of Project Completion

This is to certify that the following students of **5th and 6th semester**, have successfully completed the Field Work titled **"Stage Demonstration of Song" [Course Code: AP/MUS/504/SEC-3 & AP/MUS/604/SEC-4 respectively]** under the guidance of **Sri Sanjib Kumar Dutta, Visiting Faculty, Department of Music, Khatra Adibasi Mahavidyalaya** involving themselves throughout the 5th and 6th semester in the academic year 2022-23.

This project work/field work has been evaluated and found to meet the requirements and standards set by the Department of Music.

We commend the following students for their hard work, dedication, and commitment to excellence.

List of students participated in **"Stage Demonstration of Song" Under Music Course (Field Work) Paper code: AP/MUS/504/SEC-3 & AP/MUS/604/SEC-4** at Spring Festival [BASANTA UTSAV (2022-23)] organized by the institution.

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11		BUDDHADEB GHOSH

List of students participated in **"Stage Demonstration of Song" Under Music Course (Field Work) Paper code: AP/MUS/504/SEC-3 & AP/MUS/604/SEC-4** at RABINDRA-NAZRUL JANMA JAYANTI (2022-23) organized by the institution.

Sl. No.	Date of activity (DD-MM-YYYY)	Name of the student participated
1	10.05.2023 to 16.05.2023	ANWESHA MUI
2		TRIPARNA MODAK
3		KOYEL MURMU
4		ANINDITA SINGHA
5		JHULAN HARI

Sanjib Kumar Dutta 17.05.2023
Supervisor

Sangita Sarkar (Dey). 17.05.2023.
HOD, Department of Music

Head
Department of Music
Khatra Adibasi Mahavidyalaya

External Expert

Principal

Principal
Khatra Adibasi Mahavidyalaya
Khatra, Bankura