

SHAMBHU DAYAL GLOBAL SCHOOL
SUMMER'S HOLIDAYS HOMEWORK
SESSION 2026-27
CLASS XII

MAIN SUBJECT	RESEARCH BASED TOPICS
ENGLISH	<p style="text-align: center;">SUBJECT-ENGLISH</p> <p>TOPICS:</p> <ul style="list-style-type: none"> • Talking Cultures (Speaking Etiquettes) Roll N0-1-3 • “Earn While You Learn” Roll No 4-6 • Parents should control their kids “Social Media Accounts” Roll No- 7-9 • How Depression Affects Human Behavior? Roll No 10-12 • Influence of Modern Technology on the Quality of Education. Roll N0- 13-15 • How has the Role of Women in the Military changed? Roll N0-16-18 • Cyber Crime is the New Terrorism. Roll No 19-21 • European Influence on Fashion in the world. Roll No- 22-24 • Influence of Mother Tongue in English Language. Roll No 25-27 • Does Beauty determine how much a person will be successful in life? RollNo-28-30 • People Management and Leadership Qualities. Roll No 31-33 • Influence of Mother Tongue in English Language. Roll No 34-36 • Does Beauty determine how successful a person will be in life. Roll N0- 37-39 • People Management and Leadership Qualities. Roll No 40-43 <p>NOTE- This project-Portfolio is a compilation of the work that the students will submit in the first week of July.</p> <ul style="list-style-type: none"> • Individually Student has to prepare The Research Project. • Annual Viva (ASL) will be conducted based on this project only in the month of January. <p>General Instructions for the Project</p> <p>Project Format</p> <ul style="list-style-type: none"> • Use A4 size sheets • Maintain a neat handwritten or typed format • Use blue/black ink for writing • Add a cover page • Include page numbers • Decorate lightly and keep the presentation clean <p>Structure of the Project File</p> <ol style="list-style-type: none"> 1. Cover Page 2. Certificate 3. Acknowledgement 4. Index 5. Introduction 6. Objectives of the Study 7. Research Methodology 8. Main Content / Chapters 9. Survey Analysis 10. Findings and Conclusion 11. Bibliography

12. Appendix (Questionnaire, interview, pictures, etc.)

ASSESSMENT SHEET/RUBRICS

Criteria	Marks	Description
Understanding of case study	10	Correct identification of facts, causes, and effects
Analytical thinking	10	Logical and thoughtful responses
Writing skill	10	Grammar, clarity, and sentence structure
Vocabulary and language use	10	Appropriate use of words
Presentation	10	Neatness, organization, and creativity

Total: 50 Marks

MATHS

Chapter: Matrices and Determinants

Project Guidelines & Rubrics (50 Marks)

Suggested Project Titles

Choose any one:

1. Applications of Matrices and Determinants in Real Life
2. Study of Matrices and Their Operations
3. Role of Determinants in Solving Linear Equations
4. Matrices in Computer Graphics and Cryptography
5. Solving Simultaneous Equations Using Matrices
6. History and Development of Matrices and Determinants.

Project Guidelines

1. Cover Page

Include:

- Project Title
- Student Name
- Class & Section
- Roll Number
- School Name
- Subject
- Teacher's Name

- Academic Session

Introduction

Write about:

- Meaning of matrices and determinants.
- Importance in mathematics and technology.
- Historical background.

Example of a matrix:

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \quad A = [1 \ 2 \ 3 \ 4]$$

6. Types of Matrices

Explain with definitions and examples:

- Row Matrix
- Column Matrix
- Square Matrix
- Diagonal Matrix
- Identity Matrix
- Zero Matrix
- Symmetric Matrix
- Skew-Symmetric Matrix

Example:

$$I = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \quad I = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

7. Matrix Operations

Explain with solved examples:

- (a) Addition of Matrices
- (b) Subtraction of Matrices
- (c) Multiplication of Matrices
- (d) Transpose of a Matrix
- (e) Inverse of a Matrix

Example:

$$A^{-1} = \frac{1}{|A|} \text{adj}(A) \quad (A)^{-1} = \frac{1}{|A|} \text{adj}(A)$$

Include at least 2 solved examples of each operation.

8. Determinants

Explain:

- Meaning of determinant
- Order of determinant
- Properties of determinants
- Expansion using minors and cofactors

Example:

$$\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$$

9. Applications of Determinants

Include:

- Area of triangle
- Solving linear equations
- Checking consistency of equations

Use Cramer's Rule:

$$x = \frac{D_x}{D}, y = \frac{D_y}{D}$$

10. Real-Life Applications of Matrices

You may include:

- Computer graphics
- Cryptography
- Banking systems
- Economics
- Physics
- Population studies
- Network analysis

11. Activity Section

Suggested activities:

- Create colourful charts of matrix types.
- Solve a real-life problem using matrices.
- Draw flowcharts for matrix operations.
- Compare determinant and matrix methods.

12. Conclusion

Write:

- What you learned
- Importance of matrices and determinants
- Applications in higher studies and technology

13. Bibliography

Mention sources such as:

- NCERT Mathematics Textbook
- Reference books
- Teacher's notes
- Educational websites

Presentation Instructions

- Use neat handwriting.
- Highlight formulas using coloured pens.
- Use ruler for tables and matrices.
- Add diagrams/charts wherever possible.
- Keep project length around 20–25 pages.
- Attach graph sheets or coloured charts if required.

Assessment Rubrics (50 Marks)

Criteria	Description	Marks
Content Accuracy	Correct mathematical concepts and formulas	10
Conceptual Understanding	Proper explanation and interpretation	10
Solved Examples & Calculations	Correct numerical work and methods	10
Creativity & Presentation	Neatness, charts, design, organization	8
Applications & Activities	Real-life use and project activities	6
Viva/Oral Presentation	Confidence and ability to answer questions	6
Total		50 Marks

PHYSICS

Project 1: Electric Charges — Conceptual Mastery & Diagram Study (XII A1 Roll no. 1 to 20)

- **Total Marks:** 50
- **Chapter:** 1 — Electric Charges and Fields
- **Type:** Diagram + Written Analysis

Introduction

Electrostatics forms the bedrock of all electromagnetic theory. From the triboelectric effect to Coulomb's inverse-square law, understanding how charges behave and interact is fundamental to all of physics and electrical engineering. This project asks you to master the conceptual framework of electric charge through detailed diagrams and rigorous written analysis.

Part A — Diagram & Labelling (20 Marks)

Instructions: Draw and label all diagrams neatly. Each diagram should be on a separate page of your answer booklet.

1. Draw a well-labelled diagram showing the charging of a conductor by induction. Show all four steps: uncharged conductor, approach of charged rod, earthing the far end, removal of earth and rod — with direction of electron movement and final charge distribution.
2. Draw a diagram showing the electric field lines for:
 - a. (a) a single positive charge
 - b. (b) a single negative charge
 - c. (c) two equal and opposite charges (electric dipole)
 - d. (d) two equal positive charges
 - e. *Note: Clearly show field direction, density near charges, and regions of strong/weak field.*
3. Draw a labelled diagram of a Coulomb's torsion balance. Label the torsion fibre, charged spheres, scale, mirror, and suspension head. Show how the angle of twist relates to force.
4. Draw a diagram illustrating the concept of continuous charge distribution. Show: linear charge distribution on a rod (λ), surface charge distribution on a disc (σ), and volume charge distribution on a sphere (ρ). Label all symbols and indicate the charge element dq for each.

Part B — Written Analysis Questions (30 Marks)

Answer all of the following questions in detail:

1. Explain the three methods of charging: friction, conduction, and induction. For each, describe the process, give one real-world example, and state whether the charging body loses, gains, or shares charge.
2. State Coulomb's Law in both scalar and vector form. Explain the significance of each term. Why does Coulomb's Law hold only for point charges? What modifications are needed for extended charge distributions?
3. Define the term 'electric field intensity'. Why is a test charge assumed to be infinitesimally small? Derive the expression for the electric field due to a point charge at distance r . State its SI unit and dimensional formula.
4. Distinguish between conductors and insulators at the atomic level. Why do free electrons in metals make them good conductors? What happens to charge placed on an isolated conductor?
5. Explain the principle of superposition of electrostatic forces. Using this principle, find the net force on a charge q placed at the centroid of an equilateral triangle having equal charges Q at each vertex.

6. State the properties of electric field lines. Why do electric field lines never cross each other? What is the significance of (i) the spacing between field lines, and (ii) the direction tangent to a field line at any point?

Project 2: Coulomb's Law — Data Analysis & Experimental Investigation (XII A1 Roll no. 21 to 38)

- **Total Marks:** 50
- **Chapter:** 1 — Electric Charges and Fields
- **Type:** Research + Data Analysis

Introduction

Coulomb's Law is one of the most precisely verified laws in all of physics. By studying how electrostatic force varies with charge and distance, we can validate the inverse-square nature of the electric interaction. This project challenges you to analyse experimental data, draw conclusions, and connect Coulomb's findings to modern physics.

Part A — Data Analysis (25 Marks)

Dataset: Study the following data collected from a Coulomb's Law experiment using charged metal spheres in air.

- Trial 1: Charge $q_1 = 2.0$ nC, Charge $q_2 = 3.0$ nC, Distance $r = 5.0$ cm, Measured Force $F = 21.6$ mN
- Trial 2: Charge $q_1 = 2.0$ nC, Charge $q_2 = 3.0$ nC, Distance $r = 10.0$ cm, Measured Force $F = 5.4$ mN
- Trial 3: Charge $q_1 = 4.0$ nC, Charge $q_2 = 3.0$ nC, Distance $r = 5.0$ cm, Measured Force $F = 43.2$ mN
- Trial 4: Charge $q_1 = 2.0$ nC, Charge $q_2 = 6.0$ nC, Distance $r = 5.0$ cm, Measured Force $F = 43.2$ mN
- Trial 5: Charge $q_1 = 2.0$ nC, Charge $q_2 = 3.0$ nC, Distance $r = 20.0$ cm, Measured Force $F = 1.35$ mN

Analysis Questions — Answer all questions based on the dataset above:

1. Using Coulomb's Law ($F = kq_1q_2/r^2$), calculate the theoretical force for each trial ($k = 9 \times 10^9$ N m² C⁻²). Fill in a 'Calculated F' column. Compare with measured values and comment on any discrepancy.
2. Comparing Trials 1 and 2: when distance is doubled, what happens to the force? Comparing Trials 1 and 5: when distance is quadrupled? State the mathematical relationship between F and r and plot a graph of F vs $1/r^2$.
3. Compare Trials 1 and 3: when q_1 is doubled. Compare Trials 1 and 4: when q_2 is doubled. What does this tell you about how force depends on each charge? Plot F vs q_1 (keeping q_2 and r constant).
4. If Trial 1 is performed in water (dielectric constant $K = 80$) instead of air, what will the new force be? What physical property of water explains this reduction?
5. In Trial 3, if the two spheres are brought into contact and then separated equally, what will be the new charge on each sphere and the new force between them at $r = 5$ cm?

Part B — Research Essay: Coulomb's Law — From Torsion Balance to Quantum Electrodynamics (25 Marks)

Topic: "How precisely has Coulomb's Law been verified, and what are its limits in the modern quantum world?"

Your essay MUST include:

- A historical account of Charles-Augustin de Coulomb's original experiment — describe the torsion balance, how force was measured, and the precision achieved in the 1780s.
- The principle of electrostatic shielding — how Faraday's ice-pail experiment verified the inverse-square law to extraordinary precision, and what it implies about the photon mass.
- Comparison of Coulomb's Law and Newton's Law of Gravitation — similarities, differences, and why gravity cannot be shielded while electric force can.
- Modern applications of Coulomb's Law: xerography (photocopiers), electrostatic precipitators, inkjet printers — describe the physics behind any ONE of these in detail.
- Your conclusion: In quantum electrodynamics (QED), the electromagnetic force is mediated by photon exchange. How does this view deepen or reframe our understanding of Coulomb's Law?

Format Note: Essay must be 500–700 words with clear headings. At least 2 scientific references. Include a labelled sketch of Coulomb's torsion balance.

Project 3: Electric Field & Gauss's Law — Derivations & Applications (XII A2 Roll no. 1 to 15)

- **Total Marks:** 50
- **Chapter:** 1 — Electric Charges and Fields
- **Type:** Derivation + Application

Introduction

Gauss's Law is one of the four Maxwell Equations and is considered one of the most elegant tools in electrostatics. It relates the total electric flux through a closed surface to the total charge enclosed. Mastering Gauss's Law allows you to calculate electric fields for highly symmetric charge distributions far more efficiently than direct integration. This project builds that mastery through derivations, problem-solving, and real-world connections.

Part A — Derivations & Structured Problems (25 Marks)

Instructions: Show all steps clearly. Use proper notation. State the assumptions made in each derivation.

1. State Gauss's Law in integral form. Derive the expression for the electric field due to a uniformly charged infinite line charge (linear charge density λ) at perpendicular distance r from it. Draw the Gaussian surface used and justify its choice.
2. Using Gauss's Law, derive the electric field due to a uniformly charged infinite plane sheet (surface charge density σ) on both sides. Show why the field is uniform and does not depend on distance from the sheet.
3. Derive the electric field due to a uniformly charged solid sphere (volume charge density ρ , radius R) at: (a) a point outside ($r > R$), and (b) a point inside ($r < R$). Draw the variation of E with r on a graph.
4. Two large parallel conducting plates have surface charge densities $+\sigma$ and $-\sigma$. Using the result of the plane sheet derivation, find the electric field: (a) between the plates, (b) outside both plates. Explain the principle of a parallel plate capacitor using this result.
5. A charge Q is placed at the centre of a cube of side a . Find: (a) total electric flux through the cube, (b) flux through each face, (c) flux if the charge is placed at a corner instead of the centre. Justify using Gauss's Law and symmetry.

Part B — Concept Application & Diagram Study (25 Marks)

Answer all questions below in detail with supporting diagrams where required:

1. Define electric flux. Write its SI unit and dimensional formula. Is electric flux a scalar or vector quantity? Explain why flux through a closed surface due to an external charge is zero.
2. A spherical shell of radius R carries a total charge Q uniformly distributed on its surface. Find the electric field at: (i) $r > R$, (ii) $r = R$, and (iii) $r < R$. Draw the E vs r graph. Why is the field inside a hollow conductor zero?
3. Draw a labelled diagram showing the electric field lines between two parallel plates (capacitor configuration). Mark the regions of uniform field. What happens to the field lines near the edges of the plates (fringing effect)?
4. Explain the concept of electrostatic shielding using Gauss's Law. Why do Faraday cages protect electronic equipment? Give TWO real-world examples of electrostatic shielding.
5. An electric dipole of moment p is placed in a uniform external electric field E . Derive the expression for the torque acting on the dipole. At what orientation is the torque maximum? At what orientation is the dipole in stable equilibrium?

Project 4: Electric Dipole & Field Patterns — Scientific Infographic (XII A2 Roll no. 16 to 28)

- **Total Marks:** 50
- **Chapter:** 1 — Electric Charges and Fields
- **Type:** Creative Design + Data Analysis

Introduction

An electric dipole — two equal and opposite charges separated by a small distance — is one of the most important charge configurations in physics. Dipoles appear in polar molecules, dielectrics, and electromagnetic radiation. Understanding the field pattern and behaviour of dipoles is essential for chemistry, molecular biology, and antenna design. This project combines quantitative data analysis with a creative scientific infographic.

Part A — Data Analysis (25 Marks)

Dataset: Study the following data on the electric field of a dipole at various positions.

(Dipole moment $p = 4 \times 10^{-30} \text{ C}\cdot\text{m}$, $k = 9 \times 10^9 \text{ N m}^2 \text{ C}^{-2}$)

- Point A: On axis (end-on), Distance $r = 1.0 \text{ nm}$, Axial position, Field Formula: $E = 2kp/r^3$
- Point B: On axis (end-on), Distance $r = 2.0 \text{ nm}$, Axial position, Field Formula: $E = 2kp/r^3$
- Point C: On equatorial line, Distance $r = 1.0 \text{ nm}$, Equatorial position, Field Formula: $E = kp/r^3$
- Point D: On equatorial line, Distance $r = 2.0 \text{ nm}$, Equatorial position, Field Formula: $E = kp/r^3$
- Point E: At 45° from axis, Distance $r = 1.5 \text{ nm}$, General position, Field Formula: Complex formula

Questions:

1. Calculate the electric field at points A, B, C, and D using the given formulae. Tabulate your results.
2. Compare E at A and C (same distance): what is the ratio? What does this ratio tell us about axial vs equatorial field strength?

- When r is doubled (A vs B, C vs D), how does E change? What is the power law dependence of dipole field on distance? How does this differ from the distance dependence of a single point charge?
- The direction of the electric field on the axial line is along p (from $-q$ to $+q$ direction). On the equatorial line it is antiparallel to p . Draw a sketch showing both directions with the dipole at the centre. Why must these directions differ?
- Polar molecules like H_2O behave as permanent electric dipoles. Look up the dipole moment of water ($p \sim 6.17 \times 10^{-30} \text{ C}\cdot\text{m}$). Calculate the electric field due to this dipole at 0.5 nm on the axial line. Compare your answer with Point A above.
- A dipole is placed in a non-uniform electric field. Explain qualitatively why it experiences both a torque and a net force, unlike in a uniform field. Under what condition does the net force vanish?

Part B — Scientific Infographic (25 Marks)

Design an A4-size poster/infographic titled: "The Electric Dipole: Nature's Fundamental Charge Pair"

Your infographic MUST include:

- A central diagram of an electric dipole showing $+q$, $-q$, separation $2a$, dipole moment vector p , and the axial and equatorial lines.
- Two side-by-side field line diagrams: (a) isolated electric dipole field pattern, (b) comparison with a bar magnet field pattern — label similarities and differences.
- A visual table comparing: axial field vs equatorial field — formula, direction, and magnitude for a quick-reference guide.
- A 'Dipoles in Nature' panel: show three real-world examples of dipoles — water molecule (H_2O), CO_2 molecule (why it has zero dipole moment), HCl molecule — with structural diagrams.
- A 'Did You Know?' section with 4 facts about electric dipoles in technology (e.g., microwave oven working principle, radio antennas, polar solvent chemistry, OLED displays).

Format Note: The infographic can be hand-drawn and coloured, or created digitally and printed. It must be visually clear, scientifically accurate, and well-organised. Minimum 5 diagrams/visuals must be included.

CHEMISTRY

Topics of Research based project

- Milk Analysis:** Determine the quantity of casein present in different samples of milk. (Roll No. 1,3,5,7,9)
- Caffeine Extraction:** Measure and compare the amount of caffeine in various brands of tea powder or coffee. (Roll No. 2, 4, 6, 8, 10)
- Fruit Ripening:** Study the presence of oxalate ions in guava fruit at various stages of ripening. (Roll No. 11, 13, 15, 17)
- Ascorbic Acid:** Measure the content of ascorbic acid (Vitamin C) in citrus fruits (e.g., lemon, orange, amla). (Roll No. 12,14,16,18)
- Adulteration:** Detect the presence of common adulterants in everyday food items like spices, oils, and sugar. (Roll No. 19,21,23,25)

- **Water Analysis:** Test water samples from various local sources (tap, pond, borewell) for hardness, pH, and dissolved oxygen. (Roll No. 20,22,24,26)
- **Food Preservatives:** Study the effect of potassium bisulphite as a preservative under varying conditions like temperature and time. (Roll No. 27,29,31,33,35).
- **Rate of Fermentation:** Compare the rate of fermentation of different fruit juices (e.g., apple, grapes, orange).(Roll No. 28,30,32,34,36,38)

Note: Project file should be in Hand-written pages only. Use coloured pages but the color should be bright and no flowers, designs are printed in the background.

Structure of the Project File

1. Page
 2. Cover Certificate
 3. Acknowledgement
 4. Index
 5. Introduction
 6. Objectives of the Study
 7. Research Methodology
 8. Main Content / Chapters
 9. Survey Analysis
 10. Findings and Conclusion
 11. Bibliography
- Appendix (Questionnaire, interview, pictures, etc.)

BIOLOGY

**RESEARCH PROJECT
SUBJECT-BIOLOGY
CLASS-12**

Topics-

1. Impact of Drugs/Alcohol on Adolescence: A sociological and biological study analyzing the physiological and neurological effects of substance abuse on the developing brain. (BHASKAR)
2. Role of assisted reproductive technology in diagnosing and treating infertility (MUSKAAN)
3. Case studies on X-linked genetic disorder (YOGESH)
4. Application of biotechnology in agriculture. (ADITYA)
5. DNA Fingerprinting: A deep dive into forensic applications, the VNTR technique, and genetic profiling. (MEGHA)
6. HIV: Risk and prevention. (ARSHI)
7. Recombinant DNA Technology: Investigate how GMOs (Genetically Modified Organisms) are created and utilized in modern agriculture. (SHREYA)
8. Cancer, Types, Causes, Diagnosis, Treatment, and future aspects (KANISHKA)
9. The Human Genome Project: A study of the history, methodology, and medical impacts of mapping human DNA. (ARYA MISHRA)
10. Gene Therapy and CRISPR-Cas9: Explore how genome editing is utilized to cure genetic disorders. (ARADHYA)

11. Auto-immune Diseases: Explore conditions like Rheumatoid Arthritis or Type 1 Diabetes and how the immune system malfunctions. (ANVI)

INSTRUCTION

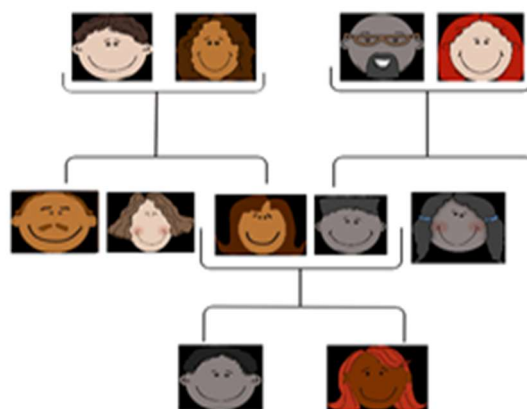
- Use A4 size sheets or practical files.
- Maintain neat handwriting.
- Use a blue/black pen.
- Use colored headings.
- Draw labeled diagrams neatly.
- Attach relevant photographs/charts if possible.
- Investigatory project report format: Certificate → Acknowledgement → Index → Introduction → Objective → Materials & Methods → Observations → Results & Discussion → Conclusion → Bibliography.

**BIOLOGY
(PCMB)**

Investigating Biological Frontiers Through Data & Action (50 Marks)

Task1: The Bioinformatics & Genetics Lab (Analytical Research) (25 Marks)

Topic: Tracking Genetic Disorders and Pedigree Analysis



Select any one human genetic disorder (e.g., Hemophilia, Cystic Fibrosis, Sickle Cell Anemia, or Color Blindness). You will act as a genetic counselor to analyze its inheritance pattern. (5 Marks)

Activity Steps:

1. Pedigree Construction: Create a hypothetical three-generation pedigree chart demonstrating how the trait is passed down. Use standard genetic symbols (squares, circles, shaded shapes). (5 Marks)

2. Probability Analysis: If a carrier female marries an affected male from your chart, calculate the statistical probability of their offspring being affected, carriers, or normal. Show your work using Punnett Squares. (5 Marks)

3. The Molecular Root: Research and write a brief molecular brief (200 words) explaining the exact mutation involved (e.g., point mutation, frameshift, or chromosomal aberration) and how it alters the resulting protein. (5 Marks)

Submission Format: Present this on an A4 sheets folder; the pedigree chart must be neatly drawn or digitally designed.

Answer the following questions:

Q.1 Mathematically derives the true probability that Individual 'A' is a carrier for the disorder. (Hint: Remember that Individual 'A' cannot possess the homozygous recessive phenotype). (3 Marks)

Q.2 Calculate the final compound probability that the first biological child born to Individual 'A' and their carrier partner will actively manifest the metabolic disorder. Show every step of your multi-stage probability calculation.

(2 Marks)

TASK-2 Prepare the Investigatory Project on one of the given Topic (25 Marks)

(1) Comparative Bioinformatic Analysis of Mutation Rates in SARS-CoV-2 Variants (LAKSHY)

(2) Quantitative Estimation of Caffeine Bioaccumulation and Its Effect on the Heart Rate of *Daphnia magna* (or Substitute Model) (PRATHA)

(3) In Vitro Evaluation of Synergistic Antimicrobial Efficacy: Plant Phytochemicals vs. Synthetic Antibiotics (VAIDEHI)

These projects must be under

Title Page

Certificate of Authenticity

Acknowledgements

Table of Contents

Introduction to the Core Topic

Review of Literature

Statement of Problem

Objective/Aim of the Project

Hypothesis & Variables

Materials & Experimental Methodology

Observations, Data Recording, & Analysis

Discussion & Biological Interpretation

Conclusion & Future Scope

References & Bibliography

Evaluation Criteria

Scientific Accuracy: Correct use of biological terminology, symbols, and mechanisms 25%

Analytical Depth: Quality of data interpretation, Punnett squares, and research arguments 35%.

Creativity & Authenticity: Originality in conducting the quadrat experiment and presentation 20%

Punctuality & Neatness: Organized presentation with clear headings 20%

ECONOMICS

List of Project Names + Step-wise Instructions for Students Group No. Project Name Steps Students Must Follow

Group-1 Money and Banking: Role of RBI in Controlling Credit Step 1: Collect data on CRR, SLR, Repo Rate for last 5 years from <http://rbi.org.in>. Step 2: Select 1 monetary policy statement of RBI and explain 2 tools used. Step 3: Interview 1 bank manager: "How do rate changes affect loans?" Step 4: Make graphs + 300-word analysis on impact on inflation.

Group -2 Government Budget & Its Components: Union Budget 2026-27 Step 1: Download Budget at a Glance from <http://indiabudget.gov.in>. Step 2: Make table of Revenue & Capital Receipts/Expenditure. Step 3: Find % of GDP spent on Education &

Health. Compare with last year. *Step 4:* Write 250 words: Is it a surplus/deficit budget? Why?

Group -3 National Income & Aggregates: GDP Calculation Methods *Step 1:* Take GDP data of India for 2023-24 from <http://mospi.gov.in>. *Step 2:* Explain GDP by Income, Expenditure, Value-Added Method with 1 numerical each. *Step 3:* Collect real example of double counting and how to avoid it. *Step 4:* Conclude: Which method is used by CSO and why?

Group -4 Foreign Exchange Rate: Depreciation of Rupee *Step 1:* Collect USD-INR rate for last 12 months from RBI site. Plot line graph. *Step 2:* List 3 reasons for depreciation from newspapers. *Step 3:* Interview 1 exporter/importer: How does it affect them? *Step 4:* Analysis: Is depreciation good or bad for India? Give 2 points each.

Group -5 Balance of Payments: Study of India's BOP 2023-24 *Step 1:* Get BOP data from RBI Bulletin. Make table of Current & Capital Account. *Step 2:* Check if India has deficit/surplus. *Step 3:* Find 1 item causing highest outflow/inflow. *Step 4:* Suggest 2 steps to improve BOP.

Group - 6 Human Capital Formation: Education & Health in India *Step 1:* Collect literacy rate & life expectancy data from Economic Survey. *Step 2:* Compare your state with Kerala on 2 indicators. *Step 3:* Conduct survey of 10 families: How much % income spent on education? *Step 4:* Conclude: Relation between human capital & economic growth.

Group - 7 Rural Development: Case Study of MGNREGA *Step 1:* Visit Panchayat office or <http://nrega.nic.in>. Get data of 1 village. *Step 2:* Find no. of days work given, wages paid, assets created. *Step 3:* Interview 2 beneficiaries: Has income increased? *Step 4:* Analysis: 2 successes + 2 problems of MGNREGA.

Group - 8 Employment: Changing Structure in India *Step 1:* Take NSSO/PLFS data: % of people in Primary, Secondary, Tertiary. *Step 2:* Compare 1991 vs 2023. Make bar graph. *Step 3:* Survey 10 adults in locality: Organised vs Unorganised sector jobs. *Step 4:* Explain: Why is disguised unemployment high in agriculture?

Group - 9 Sustainable Development: Solar Energy in India *Step 1:* Collect data: India's solar capacity from 2015-2025. *Step 2:* Case study of 1 solar park like Bhadla, Rajasthan. *Step 3:* Calculate cost saving if 1 house shifts to solar. *Step 4:* Write: How solar energy helps achieve SDG-7.

Group - 10 Inflation: WPI vs CPI – Trends & Impact *Step 1:* Collect WPI & CPI data for last 6 months from <http://mospi.gov.in>. *Step 2:* Plot dual-line graph. *Step 3:* List 3 items whose prices rose most. Ask shopkeepers reason. *Step 4:* Analysis: How does inflation affect poor vs rich?

Group - 11 GST: One Nation One Tax – 5 Years Analysis *Step 1:* List GST rates: 0%, 5%, 12%, 18%, 28%. Give 2 examples each. *Step 2:* Collect data: GST collection in last FY. *Step 3:* Interview 1 shopkeeper: Is GST better than old tax system? *Step 4:* 2 advantages + 2 challenges of GST.

Group - 12 Poverty: Estimation & Alleviation Programmes *Step 1:* Get latest poverty % from NITI Aayog. *Step 2:* Explain how poverty line is calculated. *Step 3:* Study 1 scheme: PM Garib Kalyan Yojana. Who benefits? *Step 4:* Suggest 1 new idea to remove poverty in your area.

Group - 13 Infrastructure: Digital India & Economic Growth *Step 1:* Data on internet users in India 2014 vs 2024. *Step 2:* Case study: How UPI changed small business. Interview 1 vendor. *Step 3:* List 3 infra projects in your district under Digital India. *Step 4:* Link: Infrastructure → GDP growth.

Group - 14 Environment & Sustainable Development: Delhi Air Pollution *Step 1:* Collect AQI data of Delhi for Nov 2025 from CPCB. *Step 2:* List 3 economic causes: stubble burning, vehicles, industry. *Step 3:* Calculate economic cost: 1 day school closure = loss to whom? *Step 4:* 2 solutions with economics logic.

Group - 15 Self Help Groups & Microfinance: Case Study *Step 1:* Visit 1 SHG in your area or bank. Collect data: members, loan, interest. *Step 2:* Ask 2 women: How did SHG help their income? *Step 3:* Compare SHG loan vs moneylender loan. *Step 4:* Role of NABARD in microfinance.

Part B: Individual Viva + File Work – 15 Marks Component Details Marks *Project File* Handwritten, 15-20 pages. Must include: Cover, Cert., Ack., Index, Intro, Data, Graphs, Analysis, Conclusion, Bibliography 10 *Viva-Voce* Based on your group project only. Questions on data source, why you wrote each point 5

Common Instructions for All Groups

1. Topic Allocation: Roll No. 1-4 = Group 1, 5-8 = Group 2... Roll 57-59 = Group 15. No swapping.
2. Data Source: Use only govt sites: <http://rbi.org.in>, <http://mospi.gov.in>, <http://indiabudget.gov.in>, <http://niti.gov.in>. Mention link.
3. Originality: Survey/interview must be real. Attach photo of student with shopkeeper/bank manager.
4. Assessment Rubric: 40% Analysis, 30% Data & Graphs, 20% Viva, 10% Presentation.
5. Deadline: First day after holidays. Late submission = –5 marks per day.
6. Plagiarism: Copy from internet/guides = 0 in project.

POLITICAL SCIENCE

TOPICS:

1. Relationship between India and Russia
2. Relationship between India and China
3. ASEAN
4. European Union and India
5. India’s Nuclear Policy
6. United Nations with focus on India’s candidature in Security Council.
7. Election Commission of India and Electoral Roll and its revision

Criteria	Excellent (9–10)	Good (7–8)	Average (5–6)	Below Average (1–4)	Marks
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		1. Content & Conceptual Understanding (10 marks)	Highly detailed, accurate, covers key concepts (WTO, LPG reforms, MNCs, impacts) with examples	Mostly accurate, minor gaps	Basic understanding, limited depth	Weak understanding, missing concepts	/10
		2. Research, Data & Case Studies (10 marks)	Extensive research, updated data, real-life examples (India/global), charts/graphs used	Adequate research, some examples	Limited data and examples	No proper research or evidence	/10
		3. Organisation & Structure (10 marks)	Well-structured: logical flow (intro, objectives, analysis, conclusion)	Generally organized, minor issues	Some disorganization	Poorly arranged and confusing	/10
		4. Presentation & Creativity (10 marks)	Very neat, attractive, creative use of visuals (maps, diagrams, infographics)	Good presentation with some creativity	Average neatness, limited visuals	Untidy, lacks effort and creativity	/10
		5. Viva Voce / Understanding / Originality (10 marks)	Excellent explanation, confident answers, shows originality of work	Good understanding, answers most questions	Basic explanation, lacks confidence	Unable to explain project properly	/10

HISTORY

- Topics:
1. The Indus Valley Civilization-Archaeological Excavations and New Perspectives
 2. The History and Legacy of Mauryan Empire
 3. “Mahabharat”- The Great Epic of India
 4. The History and Culture of the Vedic period
 5. Buddha Charita A Comprehensive History of Jainism
 6. Bhakti Movement- Multiple Interpretations and Commentaries.

7. The Mystical Dimensions of Sufism
8. The Architectural Culture of the Vijayanagar Empire
9. Life of Women in the Mughal Rural Society
10. Comparative Analysis of the Land Revenue Systems Introduced by the Britishers in India
11. The Revolt of 1857- Causes; Planning & Coordination; Leadership, Vision of Unity

Criteria	Excellent (9–10 / Full range)	Good (7–8)	Average (5–6)	Needs Improvement (1–4)	Marks
Content & Understanding (10 marks)	Accurate, detailed, concepts clearly explained with examples	Mostly clear, few gaps	Basic explanation, limited depth	Incomplete or incorrect content	/10
Topic Coverage (10 marks)	All subtopics well covered with proper explanation	Most topics covered	Some topics missing	Major topics not covered	/10
Competency-Based Responses (5 marks)	Answers show analysis, reasoning, real-life connection	Good understanding	Basic answers	Poor or no response	/5
Research & Use of Sources (5 marks)	Uses maps, data, examples, case studies	Some supporting material	Limited examples	No research evidence	/5
Organisation & Structure (5 marks)	Logical sequence, clear headings, well-organised	Minor issues	Somewhat disorganised	Poor structure	/5
Presentation & Creativity (5 marks)	Very neat, creative, diagrams/maps used effectively	Good presentation	Average appearance	Untidy, no effort	/5

	Conclusion & Reflection (3 marks)	Clear summary and meaningful learning reflection	Good summary	Basic conclusion	Weak or missing	/3
	Bibliography (2 marks)	Properly formatted and relevant sources	Minor errors	Incomplete	Missing	/2
	Viva Voce (5 marks)	Confident, clear answers, strong understanding	Good responses	Basic responses	Unable to answer	/5

SOCIOLOGY

PROJECT - FILE

- **Prepare a Detailed Project File on the following topics-**
1. Social institutions: Caste system and Tribal communities
 2. Social inequality and exclusion
 3. Demographic structure of Indian society

Structure of the file should be as follows-

- Cover page
- Certificate
- Acknowledgement
- Index/Table of content
- Introduction
- Statement of purpose
- Methodology (Primary interviews, questionnaire, survey, census, news – paper, online information, sample size and so on)
- Main content/ body of the project (case- study, field work, graphs, tables, findings, images etc.)
- Analysis of data (present through tables, graphs, images as evidence)
- conclusion
- Bibliography
- Appendix

Assessment Rubric-

- Research Quality – 10 Marks
- Presentation & Creativity – 10 Marks
- Data Collection and Analysis – 10 Marks
- Case Study Understanding – 10 Marks
- Explanation/ Viva – 10 Marks

PSYCHOLOGY (Opt.)

CASE – STUDY

- Prepare a Detailed **Case Study Report** on any Psychological disorder or achievement (Reference: Ch.3 Meeting Life Challenges or Ch.4 Psychological Disorders). Use charts, newspaper cuttings, diagrams, tables, graphs and real-life examples.

Assessment Rubric

- Research Quality – 10 Marks (Use of authentic information from NCERT, DSM concepts, WHO, articles, or reliable sources)
 - Presentation & Creativity – 10 Marks
 - Data Collection and Analysis – 10 Marks
 - Case Study Understanding – 5 Marks
 - Explanation/ Viva – 5 Marks
- Additional – Watch at least 5 movies based on psychological disorders and read any 1 book and prepare your summary -10 Marks

ACCOUNTANCY

RESEARCH PROJECT

SUBJECT-ENGLISH

CLASS-12

specific project based on financial statement analysis of a company covering any two aspects from the following:

Comparative and common size financial statements.

Accounting ratios.

Cash flow statements.

The following points must be kept for consideration while preparing the project-

Front Page

Acknowledgement

Certificate of supervisor

Company Profile

History and Introduction

Statement of Profit & Loss A/C

Balance Sheet

Cash Flow Statement

Ratio Analysis with interpretation of every ratio.

Conclusions

Bibliography

Note- Please remember that every student will work on separate company.

For financial statements financial year 2024-25 is to be considered only.

Rubrics for Project Work (50 Marks)

Project Topic: Financial Statement Analysis of a Company

S.No.,	Particulars	Marks
1.	Presentation & Neatness	10

2.	Company Profile, History & Introduction	10
3.	Collection and Presentation of Financial Statements (P&L A/c and Balance Sheet)	10
4.	Preparation of Cash Flow Statement,	10
5.	Ratio Analysis (Correct Calculation of Ratios),	10

BUSINESS STUDIES

Prepare a Board Project File on given topics as per your name.
Marketing Management Project Guidelines (As per CBSE)

Topic –1 BUSINESS ENVIRONMENT

**Alloted to :-Dimple,Himanshi,Nikhil kumar,Chandni,Dev Saini.Ritika
Ojha,Simran**

Introduction

Write briefly about:

- Meaning of Business Environment
- Importance of Business Environment
- Features of Business Environment

Components of Business Environment

Explain with examples:(PESTLE)

- Economic Environment
- Social Environment
- Political Environment
- Technological Environment
- Legal Environment

1. Changing Role of Women in Past 30 Years

Content to Include

- Introduction
- Role of women in earlier times vs present
- Education and career opportunities
- Women in business, politics, sports, and defence
- Government initiatives for women empowerment
- Challenges faced by women today
- Conclusion

Examples

- Indira Gandhi
- Mary Kom
- Kalpana Chawla

Add

- ✓ Pictures
- ✓ Survey/Questionnaire
- ✓ Newspaper articles

2. Women as a Bread Earner

Content to Include

- Meaning of bread earner
- Role of working women in family income

- Women in different professions
- Contribution to economy and society
- Problems faced by working women
- Work-life balance
- Conclusion

Examples

- Teachers
- Doctors
- Entrepreneurs
- Corporate employees

You may mention companies like:

- Infosys
- Wipro

Add

- ✓ Real-life examples
- ✓ Charts and statistics
- ✓ Interview/survey questions

3. Child Labour Laws, Implementation and Consequences

Content to Include

- Meaning of child labour
- Causes of child labour
- Child Labour Laws in India
- Government actions and implementation
- Effects on children and society
- Importance of education
- Conclusion and suggestions

Important Laws

- Child Labour (Prohibition and Regulation) Act
- Right to Education Act

Mention Organizations

- UNICEF
- International Labour Organization

Add

- ✓ Case studies
- ✓ Awareness posters
- ✓ Newspaper clippings
- ✓ Survey questions

Explain how changes in environment affect businesses.

Examples:

- Digital payments
- Online shopping
- Government policies
- Changing consumer preferences

Principles of Management Project Guidelines

Alloted to:- Aditya kumar, Apoorv, Ayush kashyap, Garima, harsh Sharma, Kunal, Rudraksh Anand, Abhinav Prakash, Aman Yadav, Aviak, kavya, keshav Samania, Ridham, Shlok, Swapnil

1. Cover Page

2. Certificate & Acknowledgement

Main Project Content

Introduction

Write briefly about:

- Meaning of Management
- Importance of Management
- Meaning of Principles of Management

5. Introduction of Henri Fayol

Include:

- Short biography
- Contribution to management

Use entity:

Henri Fayol

6. Fayol's Principles of Management

Explain important principles with examples:

1. Division of Work
2. Authority and Responsibility
3. Discipline
4. Unity of Command
5. Unity of Direction
6. Subordination of Individual Interest
7. Remuneration
8. Centralisation
9. Scalar Chain
10. Order
11. Equity
12. Stability of Personnel
13. Initiative
14. Esprit de Corps

7. Case Study / Practical Application

Choose a company and explain how management principles are used.

Examples:

- Tata Group
- Reliance Industries
- Infosys

8. Survey / Questionnaire

Prepare 8–10 simple questions related to management and teamwork.

Example:

- Why is discipline important in an organization?
- Which principle improves teamwork?

9. Findings & Conclusion

Write: Importance of management principles

Benefits in business organizations
What you learned from the project

10. Bibliography

Mention sources:

[CBSE Official Website](#)

[NCERT](#)

Important Tips

- ✓ Add charts/pictures
- ✓ Use real-life examples
- ✓ Keep handwriting neat
- ✓ Project length: 20–30 pages

Marketing Management Project Guidelines

Allotted to:- Aarav, Anant Tyagi, Harshita, Jiya, Lisha, Nilakshi, Prince Tyagi, Smarth, Siddhi, Vandana, Vansh arora, Vansh Swami, Varun goel, Vasu Singhal, Aditya Thakur, Ankit Kumar, Irfan, Kasvi, Krishna gupta, Mannat, Meet Arora, Nandini, Pranav, Saanvi.

1. Cover Page
2. Certificate & Acknowledgement

3. Index

Main Project Content

4. Introduction

Write briefly about:

- Meaning of Marketing
- Importance of Marketing
- Marketing Management

5. Product Selection

Choose one branded product.

Examples:

- Amul butter
- Samsung mobile
- Dabur honey

6. Product Details

Include:

- Brand Name
- Features
- Price
- Packaging
- Label/Picture

7. Marketing Mix (4Ps)

Explain:

1. Product
2. Price
3. Place
4. Promotion

8. Consumer Survey

Prepare 10–15 questions and collect responses from consumers.

9. Data Analysis

Use:

- Pie charts
- Bar graphs
- Tables

10. Conclusion

Write:

- Consumer preference
- Findings
- Suggestions

11. Bibliography

Mention sources like:

- CBSE Official Website
- NCERT

Important Tips

- ✓ Use real product and survey data
- ✓ Add pictures/charts
- ✓ Keep presentation neat
- ✓ Project length: 25–35 pages
- ✓ Prepare for viva questions on 4Ps and survey findings

4. Stock Market Project Guidelines

Alloted to:- Srishti Garg,Asif Mandal,Kashvi,Mridul

1. Cover Page

2. Certificate & Acknowledgement
3. Index

Main Project Content

4. Introduction

Write briefly about:

- Meaning of Stock Market
- Importance of Stock Market
- Role in the economy

5. Types of Financial Markets

Explain:

1. Primary Market
2. Secondary Market

6. Major Stock Exchanges

Include brief details of:

- Bombay Stock Exchange
- National Stock Exchange

7. Important Stock Market Terms

Explain:

- Shares,
- Dividend
- Bull Market
- Bear Market

- Sensex
- Nifty
- IPO

8. Investment in Companies

Choose 2–3 companies and study their shares.

Examples:

- Reliance Industries
- Tata Consultancy Services
- Infosys

Include:

- Share price movement
- Growth
- Investor preference

9. Survey / Questionnaire

Prepare 8–10 questions.

Example:

- Do you invest in shares?
- Which sector is best for investment?
- Is stock market risky?

10. Findings & Conclusion

Write:

- Importance of stock market
- Risks and benefits
- Learning outcomes

11. Bibliography

Mention sources:

- [CBSE Official Website](#)
- [NSE India](#)
- [BSE India](#)

Important Tips

- ✓ Add share market charts/newspaper clippings
- ✓ Use recent company examples
- ✓ Keep presentation neat
- ✓ Project length: 20–30 pages
- ✓ Prepare for viva questions on stock exchanges and market terms

BUSINESS ADMINISTRATION

RESEARCH PROJECT

Topic: 1. Survey to Assess Customer Satisfaction with Online Shopping over Offline Shopping

of the Project

Students are required to conduct a survey among people living in their society/locality to assess customer satisfaction with online shopping compared to offline shopping.

Students may collect responses from:

- Family members
- Neighbours
- Friends
- Shopkeepers
- Working professionals
- Senior citizens

Recommended sample size: **20–40 respondents**

Suggested Content of the Project

1. Cover Page

The cover page should contain:

- Title of the Project
- Name of the Student
- Class & Section
- Roll Number
- School Name
- Academic Session
- Subject Name

2. Certificate

A certificate signed by the teacher and student declaring that the project work is original.

3. Acknowledgement

Students should thank the teacher, respondents, parents, and others who helped in conducting the survey.

4. Index

Mention page numbers of all topics included in the project.

Main Project Content

Chapter 1: Introduction

Include:

- Meaning of Online Shopping
- Meaning of Offline Shopping
- Growth of e-commerce in India
- Importance of customer satisfaction
- Purpose of the survey

Students may refer to companies such as:

- Amazon
- Flipkart
- Myntra

Chapter 2: Objectives of the Survey

Examples:

1. To identify customer preference between online and offline shopping.
2. To study factors influencing customer satisfaction.
3. To compare convenience, pricing, quality, and service.
4. To understand problems faced by customers during shopping.
5. To analyze buying behaviour of consumers.

Chapter 3: Research Methodology

Explain:

- Area of survey
- Number of respondents
- Method of data collection
- Questionnaire method
- Sampling method
- Limitations of the survey

Survey Questionnaire (Sample)

Chapter 4: Data Presentation and Analysis

Students should present collected data using:

- Tables
- Pie charts
- Bar graphs
- Percentage analysis

Students may analyze:

- Percentage of people preferring online shopping
- Age-wise preferences
- Common issues faced by customers
- Reasons for satisfaction or dissatisfaction

Chapter 5: Findings and Interpretation

Examples:

- Most customers prefer online shopping because of discounts and convenience.
- Offline shopping is preferred for immediate purchase and product checking.
- Young customers are more inclined towards online shopping.

- Delivery delays and quality concerns reduce customer satisfaction.

Chapter 6: Conclusion and Suggestions

Include:

Conclusion

Summarize overall findings of the survey.

Suggestions

- Improve delivery services
- Provide better return policies
- Enhance customer support
- Ensure product quality
- Improve shopping experience in offline stores

7. Bibliography

Mention:

- Books referred
- Newspapers/Magazines
- Official websites
- Internet sources

Examples:

- [Amazon India](#)
- [Flipkart](#)
- [Myntra](#)

Suggested Viva-Voce Questions

1. What is customer satisfaction?
2. Why do customers prefer online shopping?
3. What are the advantages of offline shopping?
4. Which age group prefers online shopping the most?
5. What problems are commonly faced in online shopping?
6. Which mode of shopping gives more satisfaction according to your survey?

Rubrics for Assessment (50 Marks)

Criteria	Marks
Cover Page, Certificate, Acknowledgement & Index	5
Questionnaire Design and Survey Conduct	10
Data Collection and Analysis	10
Presentation through Charts/Graphs/Tables	10

Findings, Conclusion and Suggestions	5
Creativity and Overall Presentation	5
Viva Voce / Oral Presentation	5
Total	50 Marks

Topic: 2 Visit website of Reliance jio and Airtel. Make a comparison between dear plans.

Guidelines for Preparing the Project

1. Cover Page

2. Certificate

3. Acknowledgement

4. Index

Suggested Project Content

Chapter 1 – Introduction

- Meaning of Telecom Industry
- Importance of Mobile Networks in India
- Brief introduction of:
 - Reliance Jio
 - Bharti Airtel

Include:

- Founder
- Year of establishment
- Headquarters
- Services offered
- Market position

Chapter 2 – Research Methodology

Mention:

- Sources of data collection
- Official websites visited
- Method of comparison
- Observation and analysis techniques

Chapter 3 – Comparison of Plans

Students should compare at least:

- Monthly plans
- Unlimited calling plans
- Data benefits
- SMS benefits

- OTT subscriptions
- 5G services
- Validity period
- Price range

Sample Comparison Table

Basis of Comparison	Jio	Airtel
Starting Recharge Plan	₹___	₹___
Daily Data	___ GB	___ GB
Unlimited Calling	Yes/No	Yes/No
SMS Per Day	___	___
OTT Benefits	___	___
5G Availability	Yes/No	Yes/No
Validity	___ Days	___ Days

Students may include screenshots or images from official websites for better presentation. Current Airtel prepaid plans and offers include unlimited calling, daily data, OTT bundles, and 5G access on selected plans.

Chapter 4 – Marketing Strategies

Compare:

- Advertisements
- Brand ambassadors
- Customer offers
- Digital marketing
- App services
- Customer support

Chapter 5 – Customer Preference Survey (Optional)

Students may conduct a small survey among:

- Family members
- Friends
- Neighbours

Suggested Questions:

1. Which network do you use?
2. Why do you prefer it?
3. Which network provides better internet speed?
4. Which network gives better value for money?
5. Which customer service is better?

Present survey results using:

- Pie charts
- Bar graphs
- Tables

Chapter 6 – Findings and Conclusion

Write:

- Which company provides better value?
- Which company has better customer benefits?
- Which company is stronger in marketing?
- Opinion with justification

5. Bibliography

Mention sources used:

- Official websites
- Newspapers
- Magazines
- Internet sources

Example:

- [Jio Official Website](#)
- [Airtel Official Website](#)

Project Presentation Guidelines

- Use A4 size sheets/file.
- Maintain neat handwriting or typed format.
- Use headings and subheadings clearly.
- Include colored charts, tables, and images.
- Keep the project well-organized and creative.
- Total length: 15–20 pages.

Suggested Viva Questions

1. What is the telecom industry?
2. Why is competition important in business?
3. Which company provides better plans according to your research?
4. What are OTT benefits?
5. What is the importance of customer satisfaction?

Rubrics for Assessment (50 Marks)

Criteria	Marks
Cover Page, Certificate, Acknowledgement & Index	5

	<p>Questionnaire Design and Survey Conduct 10</p> <p>Data Collection and Analysis 10</p> <p>Presentation through Charts/Graphs/Tables 10</p> <p>Findings, Conclusion and Suggestions 5</p> <p>Creativity and Overall Presentation 5</p> <p>Viva Voce / Oral Presentation 5</p> <p>Total 50 Marks</p>
SKILL SUBJECT	
ELECTRONICS & HARDWARE	<p>MAKE A POWER POINT PRESENTATION</p> <p>Design Project 1 (Diagram + Written Analysis, 50 Marks) Covering network topologies (Star, Bus, Ring, Mesh), OSI model layers, and cabling connectors (RJ45, coaxial, fiber-optic) with detailed labelling instructions and conceptual questions.</p> <p>Design Project 2 (Research + Data Analysis, 50 Marks) Focusing on network metrics, including a sample dataset of packet transfer latency and throughput across different network topologies, combined with an essay on Indian national network initiatives like BharatNet.</p> <p>Design Project 3 (Derivation + Application, 50 Marks) Based on network math and subnetting, requiring step-by-step calculations for IP address subnetting (Classless Inter-Domain Routing), transmission and propagation delay derivations, and Nyquist/Shannon channel capacity formulas.</p> <p>Design Project 4 (Creative Design + Data Analysis, 50 Marks) Featuring a data-logging simulation of local network bandwidth utilization over a 24-hour cycle, paired with a visual infographic design outlining packet-switching concepts and network hardware (switches, routers, gateways).</p> <p>Design Project 5 (Research + Investigation, 50 Marks) Highlighting a real-world enterprise setup, featuring troubleshooting data from ping and traceroute commands to diagnose packet loss, and an essay analyzing industrial network standards, WAN setups, and cyber-security protocols.</p>
MEDICAL DIAGNOSTIC	<p>Make a project file on given topic</p> <p>The Role of Artificial Intelligence and Machine Learning in Modern Disease Detection</p> <p>Assessment Criteria (6 marks each segment . Total-30 marks)</p> <ol style="list-style-type: none"> 1. Introduction & Objectives 2. Scientific Content & Depth 3. Comparative Analysis between AI diagnostics and traditional lab methods 4. Ethical & Future Scope 5. Follows CBSE structure perfectly; diverse, high-quality bibliography. <p>MAKE A POWER POINT PRESENTATION (10 SLIDES) (20 MARKS) ON Early Diagnosis and Management of Polycystic Ovary Syndrome (PCOS)</p>

<p>PSYCHOLOGY</p>	<p>Class XII Psychology Main (Total 3 Tasks)</p> <ol style="list-style-type: none"> 1. Complete all the activities discussed in class 1. Prepare Flashcard for all disorders including the following sections: <ul style="list-style-type: none"> • Definition • Symptoms • Types • Possible Cause • Treatment and Therapies <p>Assessment Rubric</p> <ul style="list-style-type: none"> o Organization & Clarity – 5 Marks (systematic, easy to read and properly labelled) o Concept Accuracy – 5 Marks (Correct definition, symptoms, causes etc.) o Creativity & Presentation – 5 Marks (Attractive layout, illustrations, colour coding, icons, neatness) 2. Prepare a Detailed Case Summary on any psychological construct (disorder or achievement) as discussed in class. Use charts, newspaper cuttings, diagrams and real-life examples wherever possible. Students must collect information from: <ol style="list-style-type: none"> a. NCERT Book b. Newspaper Articles c. Research Papers d. WHO reports e. Interviews f. Online Educational Sources <p>Assessment Rubric</p> <ul style="list-style-type: none"> o Research Quality – 5 Marks (Use of authentic information from NCERT, DSM concepts, WHO, articles, or reliable sources) o Presentation & Creativity – 5 Marks o Data Collection and Analysis – 10 Marks o Case Study Understanding – 10 Marks o Explanation/ Viva – 5 Marks <p>Note: Avoid copying directly from AI or websites. Use your own observations and critical thinking.</p>
<p>LEGAL STUDIES</p>	<p>TOPIC 1: Judicial Activism vs Judicial Overreach in India</p> <p>Syllabus Unit: Legal Studies — Unit 4: Judiciary</p> <p>PROJECT OVERVIEW</p> <p>The Indian Judiciary has played a major role in protecting constitutional values, fundamental rights, and democracy. Through judicial activism, courts have addressed social injustice, environmental protection, corruption, and human rights issues. However, critics argue that excessive judicial intervention in executive and legislative matters leads to judicial overreach.</p> <p>Using constitutional provisions, landmark judgments, newspaper reports, and real-life examples, this project investigates whether the judiciary in India is maintaining a balance between activism and overreach.</p>

RESEARCH TASKS (Choose ALL 5)

1. Research the constitutional basis of Judicial Activism in India:

- Which constitutional provisions empower courts for judicial review?
- How has the Supreme Court expanded Fundamental Rights through activism?
- Research Articles 13, 32, 136, 141, and 142 of the Constitution.

2. Landmark Judgments Study:

Research FOUR important cases of judicial activism such as:

- Kesavananda Bharati Case
- Vishaka v. State of Rajasthan
- Maneka Gandhi Case
- Right to Privacy Case
- Environmental protection judgments

For each case:

- Facts of the case
- Judgment delivered
- Social and constitutional impact

3. Investigate instances of Judicial Overreach:

Research cases where courts were criticized for interfering in policy-making or executive functions.

Questions to explore:

- Why were these judgments controversial?
- How did the government and public react?
- Did these interventions strengthen or weaken democracy?

4. Public Interest Litigation (PIL) and Access to Justice:

Research the role of PIL in India:

- How has PIL helped marginalized groups?
- What are the advantages and misuse of PILs?
- Which social issues are most commonly addressed through PILs?

Include examples and case studies.

5. Comparative Study:

Compare the Indian Judiciary with the judiciary of any ONE democratic country:

- USA
- UK
- Canada
- South Africa

Compare:

- Judicial review powers
- Appointment of judges
- Independence of judiciary
- Role in protecting rights

★ **CRITICAL THINKING TASK** ★

Prepare a one-page “Judicial Balance Report Card” for India.

ASSESSMENT RUBRICS

Content Accuracy & Depth	14
Research Quality & Citation	10
Critical Thinking & Thesis	12
Visual Aids (Maps/Charts/Timeline)	8
Writing Structure & Language	6
TOTAL	50

PAT

RESEARCH PROJECT TOPIC:-

- **Impact of Exercise on Mental Health** – Study how regular physical activity reduces stress, anxiety, and depression among students. **(Roll N0-1-5)**
- **Role of Yoga in Physical Fitness** – Explore yoga’s contribution to flexibility, strength, and relaxation. **(Roll N0-6-10)**
- **Nutrition and Athletic Performance** – Investigate how diet influences stamina, recovery, and overall performance. **(Roll N0-11-15)**
- **Technology in Fitness Training** – Examine fitness apps, wearables, and online coaching in modern training. **(Roll N0-16-20)**
- **Injury Prevention in Sports** – Research warm-ups, cool-downs, and protective gear to reduce injuries. **(Roll N0-21-25)**
- **Physical Activity and Academic Achievement** – Analyze the link between exercise and concentration, memory, and grades. **(Roll N0-26-30)**
- **Gender Differences in Physical Fitness** – Compare male and female responses to training programs. **(Roll N0-31-36)**.
- **Traditional Games and Modern Fitness** – Study how indigenous games (like kabaddi, kho-kho) contribute to physical development. **(Roll N0-37-43)**

NOTE- This project-Portfolio is a compilation of the work that the students will submit in the first week of July.

- **Individually Student has to prepare The Research Project.**
- **Annual Viva (ASL) will be conducted based on this project only in the month of January.**

General Instructions for the Project

Project Format

- Use A4 size sheets
- Maintain a neat handwritten or typed format
- Use blue/black ink for writing
- Add a cover page
- Include page numbers
- Decorate lightly and keep the presentation clean

Structure of the Project File

13. Cover Page
14. Certificate
15. Acknowledgement

- 16. Index
- 17. Introduction
- 18. Objectives of the Study
- 19. Research Methodology
- 20. Main Content / Chapters
- 21. Survey Analysis
- 22. Findings and Conclusion
- 23. Bibliography
- 24. Appendix (Questionnaire, interview, pictures, etc.)

ASSESSMENT SHEET/RUBRICS

Criteria	Marks Distribution	Details
Research Content	10	Depth of study, relevance to syllabus, originality
Presentation	10	Neatness, structure, clarity of charts/graphs
Practical Application	10	Connection to real-life fitness/training
Critical Analysis	10	Ability to compare, evaluate, and conclude
References & Sources	5	Proper citation of books, articles, or interviews
Creativity	5	Innovative ideas, unique approach

ENTREPRENEURSHIP

1. Market Survey Project

Brief Introduction

This project is based on conducting a survey to understand:

Customer needs

- Market demand
- Consumer preferences
- Competitors in the market

You will collect real data through questionnaires, interviews, or online forms and analyze the results using charts and graphs.

Include:

- Introduction of product/service
- Objectives of survey
- Questionnaire (10–15 questions)
- Survey analysis with charts
- Findings and conclusion
- Suggestions

Examples of Survey Topics

Preference for online shopping

Demand for healthy snacks

Use of digital payment apps

You may mention platforms like:

[Google Forms](#)

[Paytm](#)

2. Business Plan Project

Brief Introduction

This project involves preparing a complete business idea or startup plan. Students explain how they will start and manage a business successfully.

Include:

- Business idea/startup name
- Product or service details
- Target customers
- Investment required
- Marketing strategy
- Profit estimation
- Future scope

Examples of Business Ideas

Homemade food business

Eco-friendly products

- Clothing brand
- Tuition classes
- Handmade gift items

Important Sections

- Executive Summary
- Objectives
- Financial Plan
- Promotional Activities
- Risk Analysis
- Conclusion

Important Tips for Both Projects

- ✓ Use real-life data and examples
- ✓ Add charts, pictures, and graphs
- ✓ Keep language simple and practical
- ✓ Follow proper file format:
 - Cover Page
 - Certificate
 - Acknowledgement
 - Index
 - Main Content
 - Conclusion & Bibliography

✓ **Project should be neat and creative**

DATA SCIENCE

Topic: In this project, students will make predictions using historical data. In this project, students will predict whether or we can see meteor showers from any city by using historical data.

Procedure:

1. Download and setup visual code
2. Gather historical data
3. Cleanse the data
4. Create predictor function

Reference: CBSE data science handbook class 12th

Rubrics:

Project File: 20 marks

Code accuracy: 15 marks

PowerPoint Presentation: 15 marks

AI

Python Programming Programs:

Practical 1: Working with Pandas DataFrame

Aim: To write a Python program to create a Pandas DataFrame using a sequence data type and perform basic data operations as under:

1. Create a DataFrame using a sequence of data type (e.g., list of dictionaries).
2. Display the entire DataFrame.
3. Display the first 5 records.
4. Display the last 10 records.
5. Display the number of missing (NULL) values in the dataset.

Practical 2: Working with CSV File (Titanic Dataset)

Aim: To read a Titanic dataset CSV file using Pandas, convert it into a DataFrame and perform statistics analysis and data cleaning operations as under:

1. Use a publicly available Titanic dataset in CSV format.
2. Read the CSV file and convert it into a Pandas DataFrame.
3. Perform basic statistical functions to understand the dataset.
4. Check for missing values.
5. Fill missing data using appropriate methods.

Practical 3: Evaluating a Simple Machine Learning Model

Aim: To evaluate a simple machine learning model using the Iris dataset in Python with the help of scikit-learn as under:

1. Load the Iris dataset from scikit-learn.
2. Preprocess and split the dataset into training and testing sets.
3. Train a classification model(Logistic Regression).
4. Evaluate the model using accuracy and classification metrics.

Practical 4: Train-Test Split in Linear Regression using Scikit-learn

Aim: To demonstrate the use of train-test split in a Linear Regression model using Python as under:

1. Load a sample regression dataset(California Housing).
2. Split the dataset into training and testing sets.
3. Train a Linear Regression model.
4. Evaluate the model on the data using metric like Rsquare score and Mean Squared Error.

Practical 5: Python Program for K Means Clustering

Aim: To demonstrate the K Means Clustering using Python.

Program 6: Creating a simple rule based chatbot using Python.

Aim: To demonstrate the simple rule based chatbot using Python.

Orange Data Mining:

Practical 1: Perform step wise procedure of Data Visualization using the Orange Data Mining Tool.

	<p>Objective: To load a dataset, explore its structure and visualize relationships between variables.</p> <p>Practical 2: Perform Classification with Orange Data Mining.</p> <p>Objective: To build and train a classification model to predict the species of iris flowers based on their measurements.</p> <p>Practical 3: Evaluate the Classification Model with Orange.</p> <p>Objective: To further analyze the performance of a classification model using the confusion Matrix and ROC Analysis widgets.</p> <p>Practical 4: Computer Vision with Orage – Image Classification</p> <p>Rubrics: Project File: 20 marks Code accuracy: 15 marks PowerPoint Presentation: 15 marks</p>																		
DTI	<p>https://cbseacademic.nic.in/web_material/Manuals/DT_Curriculum12.pdf</p> <p>FROM THIS BOOK TAKE MODULE 5:- Capstone Project</p> <p>Make Project File.</p> <p>ASSESSMENT RUBRICS</p> <table> <tr> <td>Content Accuracy & Depth</td> <td>10</td> <td></td> </tr> <tr> <td>Research Quality & Citation</td> <td>10</td> <td></td> </tr> <tr> <td>Critical Thinking</td> <td></td> <td>10</td> </tr> <tr> <td>Visual Aids (Maps/Charts/Timeline/Photos)</td> <td>10</td> <td></td> </tr> <tr> <td>Writing Structure & Language</td> <td>10</td> <td></td> </tr> <tr> <td></td> <td>TOTAL</td> <td>/ 50</td> </tr> </table>	Content Accuracy & Depth	10		Research Quality & Citation	10		Critical Thinking		10	Visual Aids (Maps/Charts/Timeline/Photos)	10		Writing Structure & Language	10			TOTAL	/ 50
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SCULPTURE	<p>HOLIDAY HOMEWORK (2025-26)</p> <p>Part A – Research Work (Theory)</p> <p>Viva Questions</p> <ol style="list-style-type: none"> 1. What is sculpture? 2. What is the importance of recycling in art? 3. Name any two tools used in clay modelling. 4. What colours are commonly used in Sculpture 5. Difference between 2D and 3D art. <p>File Work</p> <p>Prepare a decorative file including:</p> <ol style="list-style-type: none"> 1. Cover Page 2. Index 3. Research Work 4. Practical Photographs 5. Material Details 6. Learning Outcomes 7. Self Reflection <p>Part B – Practical Work</p> <p>Practical Activity 1 Best Out of Waste Sculpture</p> <p>Make Any One: Animal sculpture</p>																		

Human face mask
Mini monuments
Materials: -
Waste newspaper, cardboard, glue, clay, acrylic colours, old bottles etc.
Size; Minimum 12 inches

Submission Instructions

Submit in a handmade decorative file.
Attach photographs of practical work.
Maintain neatness and creativity.
Last Date of Submission: After Summer Vacation.

Learning Outcomes

Students will:
Develop creativity using waste materials.
Understand recycling and environmental awareness.
Learn sculpture techniques and clay handling.
Improve observation and design skills.

Total: 50 Marks

COMMERCIAL ART

HOLIDAY HOMEWORK (2026-27)

Practical File + Research Based Creative Project

PART A – RESEARCH FILE WORK

Prepare a Creative Research File
Use A4 sheets/file with decorative presentation.

Activity 1 – Research on Commercial Art

Write detailed notes with illustrations on:

1. Commercial Art
2. Advertising Design
3. Packaging Design
4. Illustration

Activity 2 – Research on Famous Commercial Artists

Research ANY THREE artists

1. Raja Ravi Varma
2. Maqbool Fida Husain
3. Nandalal Bose
4. Jamini Roy

Activity 3 – Advertisement Research Study

Collect 4 Advertisements from:

Newspaper, Magazine, Social Media, Billboard

Analyze them in a table:

Brand Target Audience, Attractive Element, Color Use, Your Suggestion

PART B – PRACTICAL CREATIVE WORK (A2 Size Sheet)

Activity 1 – Poster Design Themes:

1. Save Environment
2. Digital Awareness
3. Women Safety

	<p>4. Fitness & Health 5. Water Conservation</p> <p>Activity 2 – Packaging Design Design packaging for ANY TWO product:</p> <p>1. Chocolate 2. Juice 3. Cosmetic Product 4. Organic Food</p> <p>INSTRUCTIONS</p> <ul style="list-style-type: none"> • Use bright and balanced colors • Maintain neatness and originality • Decorative file cover compulsory • Add handmade borders and headings • Avoid copying from internet <p>ASSESSMENT RUBRICS Criteria Marks</p> <p>Research & Analysis (10) Creativity & Innovation (10) Practical Design Skills (10) Presentation & Neatness (10) Original Ideas & Observation (10) TOTAL = 50 MARKS</p>
CLUB SUBJECT	
GAMIFICATION	Task 1 – Create games related to counting principle, probability
AI EMBROIDERY	<ul style="list-style-type: none"> • Basic Stitches Practice Learn and practice 5 stitches: running stitch, backstitch, chain stitch, satin stitch, and French knot. → Make a sampler cloth with each stitch labeled. Paste all the samples in Practical File • Festive Motif Creation Choose 2 holiday-themed motifs (like a star, bell, or snowflake) and embroider them on fabric squares. • Paste all the samples in Practical File
3D EMBEDDED TEC.ROBOTICS	<p>Activity 1: Self balancing robot Materials Required:</p> <p>1. Arduino uno board 2. L298N motor driver 3. MPU 6050 sensor 4. 18650 battery holders with on/off switch 5. 18650 batteries 6. Motors with wheels 7. Jumper wires</p>

JOURNALISM

Theme: “*Investigative Journalism and Media Responsibility*”

Students will explore advanced journalism practices, media ethics, and investigative reporting techniques through research and field-based activities.

Project Title Options

Choose any ONE:

1. **Media Trials and Their Impact on Justice**
2. **Investigative Journalism in India**
3. **Paid News and Media Ethics**
4. **Freedom of Press vs National Security**
5. **Role of Journalism During Elections**
6. **Influence of AI and Technology on Journalism**
7. **Sensationalism in News Reporting**

Research-Based Tasks

Part A – Investigative Research

Students must:

- Collect case studies
- Compare media coverage from different sources
- Analyze bias, language, and presentation
- Include factual evidence and references

Suggested Sources:

- Newspapers
- News channels
- Podcasts
- Government reports
- Journalist interviews

Part B – Journalism Portfolio

Complete ALL:

1. Investigative Article

Write a 800–1000 word investigative article on a social issue.

2. Editorial Writing

Write one editorial expressing opinion on a current national or international issue.

3. Media Analysis

Compare reporting styles of:

- One TV channel
- One newspaper
- One digital platform

4. Documentary/Podcast Task

Create:

- A 3–5 minute podcast/video report
OR
- A photojournalism presentation

Part C – Field Research

Conduct a survey/interview on:

“Do people still trust traditional journalism?”

- Minimum 15 responses
- Include statistical interpretation
- Present findings using charts/tables

Submission Guidelines

- Typed report preferred
- Proper headings and citations
- Original photographs/screenshots
- Bibliography mandatory
- Attach QR code/link for podcast/video if applicable

Criteria	Marks
Depth of Research & Authentic Sources	10
Investigative & Analytical Skills	10
Journalistic Writing Quality	10
Creativity & Media Presentation	10
Field Research & Data Interpretation	5
Viva/Oral Presentation	5
Total	50 Marks

Algorithm

Prepare a file with all these 6 python codes with flow chart and algorithm.

1. Write a Python program to print “Hello World”.
2. Write a Python program to add two numbers entered by the user.
3. Write a Python program to calculate the area of a rectangle.
4. Write a Python program to check whether a number is odd.
5. Write a Python program to find the largest of two numbers.
6. Write a Python program to find number is odd or even.
7. Write a Python program to find number is positive or negative.

Question 1 carries 2 marks and remaining are of 8 marks each.

MOVIE MAKING

Holiday Homework – Movie Making
Class 12th
Topic: Short Film Production
Write Short Notes on:
Storyboard
Framing
Camera Composition
Practical Work:
Create a 3–5 minute short film with:
Script
Storyboard
Different camera shots
Background music and editing