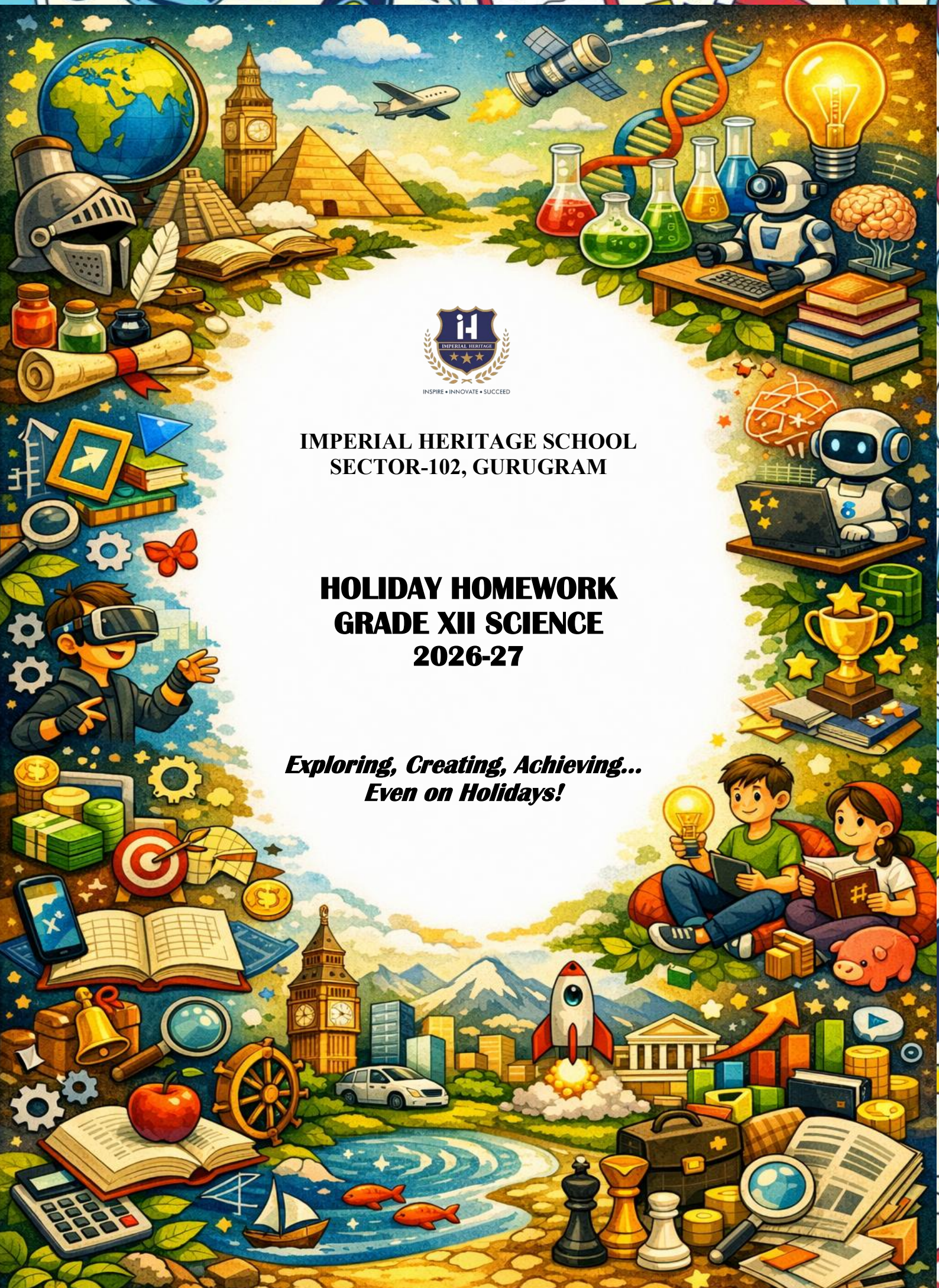


INSPIRE • INNOVATE • SUCCEED

IMPERIAL HERITAGE SCHOOL
SECTOR-102, GURUGRAM

HOLIDAY HOMEWORK
GRADE XII SCIENCE
2026-27

Exploring, Creating, Achieving...
Even on Holidays!

“Curiosity Never Goes on Vacation—and neither does the joy of learning.”

Dear Parents,

Warm greetings!

At Imperial Heritage School, we view learning as a continuous journey—one that extends far beyond the classroom walls. The purpose of holiday homework is not merely to keep students occupied, but to inspire them to explore, reflect, and grow independently. It is an opportunity for children to connect classroom knowledge with the world around them, while discovering their own unique ways of learning.

The Purpose Behind Holiday Homework

Holiday assignments are thoughtfully designed to:

- Sustain the rhythm of learning even during the break
- Encourage application of concepts in everyday life
- Develop responsibility, discipline, and effective time management
- Strengthen analytical thinking, creativity, and problem-solving abilities

Learning Through Projects

Each assignment is aligned with CBSE guidelines and focuses on experiential, project-based learning. These tasks are curated to ensure meaningful engagement, allowing students to bridge theory with practical understanding in a creative and enjoyable manner.

Assessment Parameters

Holiday homework will form a part of Internal Assessment and will be evaluated on:

- Content
- Presentation
- Relevance
- Creativity
- Originality
- Timely Submission

Kindly Note the Project/Practical written work assigned will be evaluated as CBSE project.

Guidelines for Students

- Be Authentic: Your work should reflect your own ideas and efforts.
- Plan Ahead: Break tasks into small parts and complete them gradually.
- Follow Instructions: Read each guideline carefully before beginning.
- Maintain Neatness: Clear, organized work always creates a strong impression.
- Think Creatively: Present your work in an innovative and engaging manner.
- Read Daily: Cultivate the habit of reading to expand your imagination and language skills.
- Practice Mathematics: Consistency is key—regular practice leads to mastery.
- Seek Guidance, Not Substitution: Parents may guide, but students must complete the work independently.
- Prioritize Quality: Focus on depth, clarity, and meaningful content.

A Fresh Thought for Our Learners

“Where Questions Bloom”
When holidays stretch like open skies,
Let wonder wake and questions rise.
Not all learning lives in books,
It hides in paths and curious looks.
In silent thoughts, in things you make,
In every risk you choose to take,
In colours mixed or stories spun,
In problems solved just for the fun.

A restless mind, a seeking heart,
That’s where true journeys always start.
So learn, explore in your own way—
Let curiosity lead each day.

Submission Date: 6th July, 2026

We eagerly await the thoughtful and creative work our students will present. May this vacation be a time of joyful discovery, meaningful experiences, and personal growth.
Wishing you all a safe, refreshing, and enriching summer break!

Warm regards,

Ms. Neelu Sharma
Principal

ENGLISH

I. CBSE ASL BASED PROJECT

Topic - Stolen Childhoods, Silent Cries

Integrated Chapter - Lost Spring (Flamingo)

Objective - Creating a project on child servitude is an impactful way to raise awareness about this pressing issue and advocate for the rights and well-being of children. Here's a project outline:

Students will listen to podcasts/ interviews/radio or TV documentaries on the given topic and do thorough research on the same. Prepare a report including surveys, statistical data, graphs etc countering or agreeing with the speakers in 800 to 1000 words and submit.

Your project file should contain the following details:

1: Cover page

- Prepare a creative cover page giving relevant details of your project.

2: Index

- Make 3 columns – Serial no, topic, page no.

3: Statement of Purpose

- Write down at least five objectives of the given project.

4: Acknowledgement

- Sample to be provided by the teacher.

5: Certificate of Completion

- Sample to be provided by the teacher.

6: Action Plan

- Sample to be provided by the teacher.

7: Materials Used

- List down all the materials used by you in making of the project.

8: Report

- Report to be written in approx.1000 words.

9: Student Reflections

- Share your views/conclusion on the given topic and write the learning outcomes

10: Evidence of your report

- Photographs and other pieces of evidence of the research to be pasted.

11: Bibliography

- Pen down the sources from where the information was accessed.

Note:

1. Make a file of your choice with A4 size sheets only.
2. Sheets can be colourful or plain.
3. Presentation should be neat.
4. Project must showcase your creativity.
5. Student findings should be his/her original work.

II. HOLIDAY HOMEWORK WORKSHEET

Complete the Holiday HW Worksheet uploaded on ERP. Q/As to be done in the notebook.

III. SUGGESTED READING

'Silas Marner' by George Eliot is a long reading text prescribed by CBSE for extensive study. Please find the link below for online reading. Write the summary of the novel in 120-150 words and present it creatively with an illustration. Happy Reading!

https://cbseacademic.nic.in/web_material/doc/novels/1_Silas%20Marner,%20by%20George%20Eliot%20-%20Class%20-%20XII.pdf

MATHEMATICS

PART A - Write the following Math activities in your Practical file.

1. To verify that the relation R in the set L of all lines in a plane, defined by R = {(l, m) : l ⊥ m} is symmetric but neither reflexive nor transitive.
2. To verify that the relation R in the set L of all lines in a plane, defined by R = {(l, m) : l || m} is an equivalence relation.
3. To demonstrate a function which is not one-one but is onto.
4. To draw the graph of $\sin^{-1}x$ using the graph of sin x and demonstrate the concept of mirror reflection (about the line y = x).
5. To find analytically the limit of a function $f(x)$ at x = c and also to check the continuity of the function at that point.
6. To construct an open box of maximum volume from a given rectangular sheet by cutting equal squares from each corner.

PART B - Attempt the following project. (Use A4 size sheets).

Topic: Inverse Trigonometric Functions

Inverse trigonometric functions are defined by restricting domains of trigonometric functions. Principal value branches ensure functions become one-to-one and graphs help in visualizing behaviour and restrictions. Inverse trigonometric functions (like $\sin^{-1}x$, $\cos^{-1}x$, $\tan^{-1}x$) are used to find angles when the values of trigonometric ratios are known. They have many important applications in mathematics, science, engineering, and real-life applications.

After completing this project, students will be able to understand inverse trigonometric functions, study principal value branches, interpret graphs and properties and improve visualization of mathematical concepts.

Instructions: You are required to study and analyse the inverse trigonometric functions.

For each function, you must:

1. Define each function clearly.
2. Write its principal domain and range.
3. Draw neat graphs.
4. Write properties of the function.
5. Conclusion.

Note: Your project should have a cover page, title and objectives.

PART C (To be done in Practice Notebook)

1. Do all examples of Chapters 1, 2, 3, 4 and 5.
2. Do 10 questions daily of chapters 1, 2, 3, 4 and 5 from NCERT Exemplar and other reference books.
3. Do the revision assignment uploaded on ERP.

PHYSICS

An investigatory project is a practical assignment based on experimental work that helps students understand scientific concepts through the scientific method. It involves selecting a topic, researching it, forming a hypothesis, conducting experiments, and analyzing results. These projects encourage active learning, develop research skills, and promote scientific thinking and creativity. While preparing the project, students should focus on presenting a clear and accurate understanding of the topic, giving more importance to current observations and findings rather than relying heavily on past work.

The following should be the elements of the Investigatory Project:

1. Cover page
2. Certificate
3. Declaration
4. Acknowledgement
5. Index
6. Aim
7. Introduction
8. Theory and principle
9. Formula
10. Diagram
11. Applications
12. Conclusion
13. Bibliography

Rubrics for assessment are as follows:

Understanding of Concept	Experimental design/ Methodology	Data Collection and Observation	Data analysis and Interpretation	Conclusion and Applications	Originality and Creativity	Timely Submission

1. List of Physics Investigatory Project

S.No.	Name of Student	Project topic
1.	Vedansh Butola	1. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle. 2. Working model - Wheatstone bridge. https://youtu.be/77T3tXDVWOk
2.	Jai Chauhan	1. To estimate the charge induced on each one of the two identical Styrofoam balls (or pith) balls suspended in a vertical plane by making use of Coulomb's law. 2. Working model of Pith ball Electroscope https://www.youtube.com/watch?v=_q8pDztsclw

3.	Gunjan	1. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids. 2. Working model to verify Faradays laws of EMI https://youtu.be/9WQmMenvios
4.	Somya Sharma	1. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer. 2. Working model of a step-up transformer https://youtu.be/QgTU0_bY0ns
5.	Mudit Chhabra	1. To study various factors on which the internal resistance/EMF of a cell depends. 2. Working model to demonstrate the property of capacitor that it allows ac and blocks dc. https://youtu.be/NnsAG3qUYZU
6.	Ranita Kaur	1. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/ (bulb) in a circuit fed up by an A.C. source of adjustable frequency. 2. Working model – To demonstrate EMI with neodymium magnetic https://youtu.be/hNyxO2_tvYA
7.	Saranya Chaudhary	1. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency. 2. Working model for the verification of Right-Hand Thumb rule https://youtu.be/bMisJP9MiXQ

2. **Complete the Physics Revision Worksheet in your notebook. The worksheet has been uploaded on the ERP.**

CHEMISTRY

Investigatory projects in chemistry serve several important purposes that contribute to both the academic and practical aspects of learning**.**

Investigatory Project

S.No.	Name of Student	Project topic
1.	Gunjan	Study of the effect of Potassium Bisulphite as food preservative under various conditions (temperature, concentration, time, etc.)
2.	Jai Chauhan	Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
3.	Mudit	Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
4.	Ranita	Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.
5.	Saranya	Study of the presence of oxalate ions in guava fruit at different stages of ripening
6.	Somya	Study the acidity of different samples of tea leaves
7	Vedansh	Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.

Guidelines for the Project:

The investigatory project should contain:

1. Cover page with name of topic
2. Acknowledgment
3. Certificate
4. Index
5. Aim
6. Introduction
7. Content-Theory,procedure,observation data,diagram/pictures ,result,application etc
8. Bibliography

Rubrics for assessment:

Neatness	creativity	correct observation	Conclusion and Applications	Timely Submission

Do the revision assignment uploaded on ERP.

BIOLOGY

INVESTIGATORY PROJECT

In this activity, we wish you to make a detailed project on any one of the given topics providing key facts and information on the pointers as mentioned below:

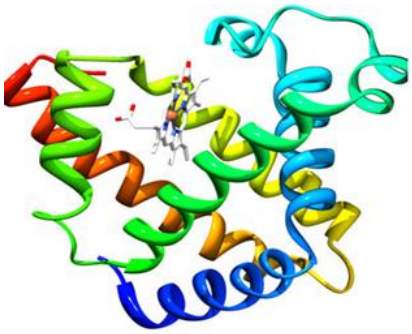
1. Haemophilia

Content to be covered:

- Scientific discovery and other historical aspects (emphasis on European Royalty)
- Signs and symptoms
- Genetical aspects
- Types and incidences
- Diagnosis (before and after pregnancy and post birth)
- Treatment and management
- Recent researches and advances in line of treatment
- Case study

2. Thalassemia

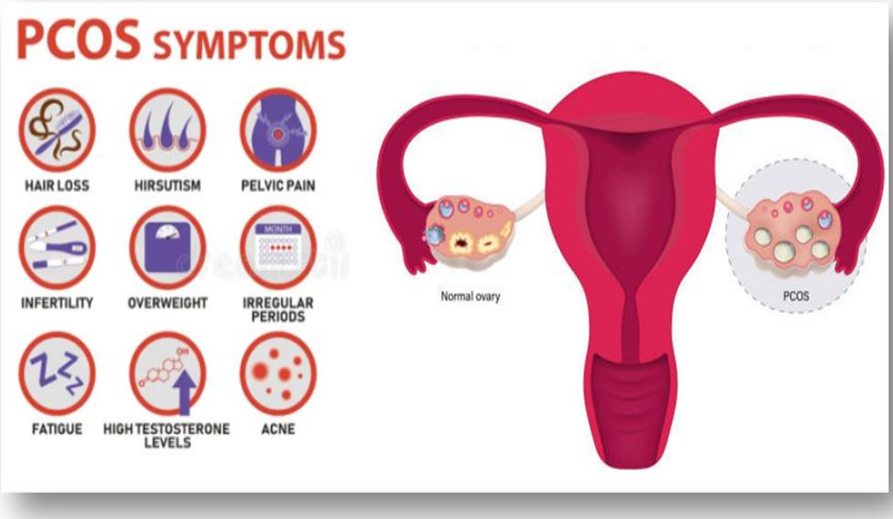
Content to be covered:



- Signs and symptoms
- Aspects of inheritance
- Types
- Diagnosis
- Treatment and management, prevention
- Recent researches and advances in line of treatment
- Case study

3. Polycystic Ovarian Syndrome

Content to be covered:



- Signs and symptoms
- Clinical features (adolescence and reproductive age)
- Menstrual dysfunction
- Epidemiology
- Pathophysiology
- Gonadotropin secretion, insulin secretion and hyperandrogenisms
- Androgen biosynthesis
- Weight and energy regulation
- Diagnosis
- Goals of treatment
- Case study

4. Assisted Reproductive Technologies (ART)

Content to be covered:

- Definition and concept of Assisted Reproductive Technologies
- Historical development and scientific advancements in ART
- Causes of infertility (male and female factors)
- Types of ART (IVF, ICSI, ZIFT, GIFT, AI, Surrogacy)
- Procedure and working of major techniques (with labelled diagrams)
- Ethical issues and social implications
- Advantages, limitations, and success rates
- Recent research and technological advancements
- Case study related to ART

5. Lung Cancer

- Scientific discovery and historical background (discovery of the link between smoking and lung cancer, development of imaging and screening techniques)
- Causes and risk factors
- Signs and symptoms (persistent cough, chest pain, breathlessness, coughing blood, weight loss, fatigue, etc.)
- Biological and genetic aspects (effect on lung tissues, mutation in genes such as EGFR, ALK, KRAS, role of carcinogens and cell division)
- Types and incidence (small cell lung cancer and non-small cell lung cancer, global and Indian statistics, age and gender distribution)
- Diagnosis (X-ray, CT scan, PET scan, bronchoscopy, biopsy, screening and early detection methods)
- Treatment and management (surgery, chemotherapy, radiotherapy, immunotherapy, targeted therapy, palliative care and lifestyle management)
- Prevention and awareness
- Recent research and advances in treatment
- Case study

Note:

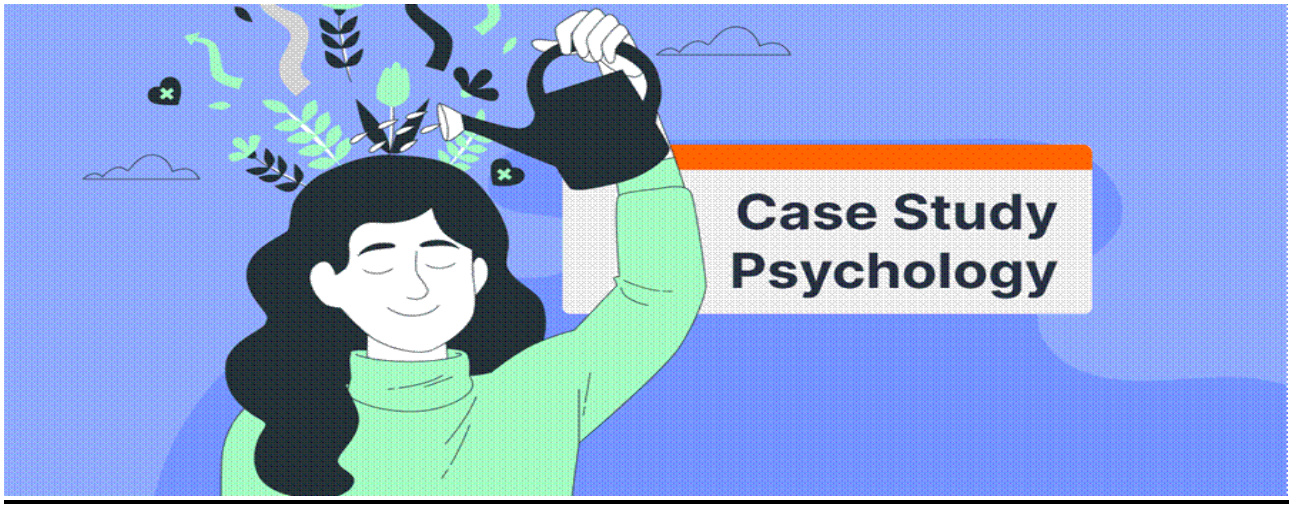
- Make a file of your choice with A4 size sheets only (sheets can be colourful or plain).
- Use illustrative pictures (printout or drawing) and data wherever necessary to make the project informative.
- Apart from the above-mentioned content, project should include the following:
  - Cover page

- Certificate
- Index
- Acknowledgements (Thanks giving to those who helped you in understanding the concept of the project).
- Bibliography (all the sources of information where you gathered the information from? examples: books, internet links etc.)

PSYCHOLOGY

Case Study as a Project Work in Class XII Psychology

A case study is one of the most important practical components of Class XII Psychology because it bridges the gap between theoretical concepts and real-life human behavior. Instead of only learning definitions and theories, students get an opportunity to observe, analyze, and interpret psychological processes in a real individual.



LIST OF SUGGESTED TOPICS

Mental Health & Behavior	**Digital Life**	**Social & Family Dynamics**	**Personality & Development**	**School-related Issues**
1 Exam anxiety among students 2 Social media addiction 3 Sleep patterns and mental health 4 Stress management in adolescents	1 Impact of Instagram/reels on self-esteem 2 Screen time vs academic performance 3 Online gaming behavior	1 Parenting styles and personality 2 Peer pressure in teenagers 3 Effects of nuclear vs joint family	1 Introversion vs extroversion 2 Self-concept in adolescents 3 Emotional Intelligence	1 Adjustment problems in new school 2 Academic stress 3 Bullying and its psychological effects

THE FORMAT TO FOLLOW;

1. Cover Page

- Title: CASE STUDY (in bold, capital letters)
- Topic/Subject of Case Study
- Student's Name
- Class & Section
- Roll Number (Board/School)
- School Name
- Academic Session

2. Certificate

3. Acknowledgement

4. Index

5. Introduction

- Meaning of case study
- Importance in psychology
- Brief overview of chosen topic

6. Objectives of the Study

- What you aim to find out

7. Tools and Techniques Used

Include:

- Observation
- Interview (structured/semi-structured)
- Psychological tests (mention full names)
- Questionnaire

8. Identification Data (Demographic Details)

- Name (use initials for confidentiality)
- Age
- Gender
- Class/Occupation
- Family type (nuclear/joint)

9. Case History

a) Family Background

b) Personal & Developmental History

c) Medical History

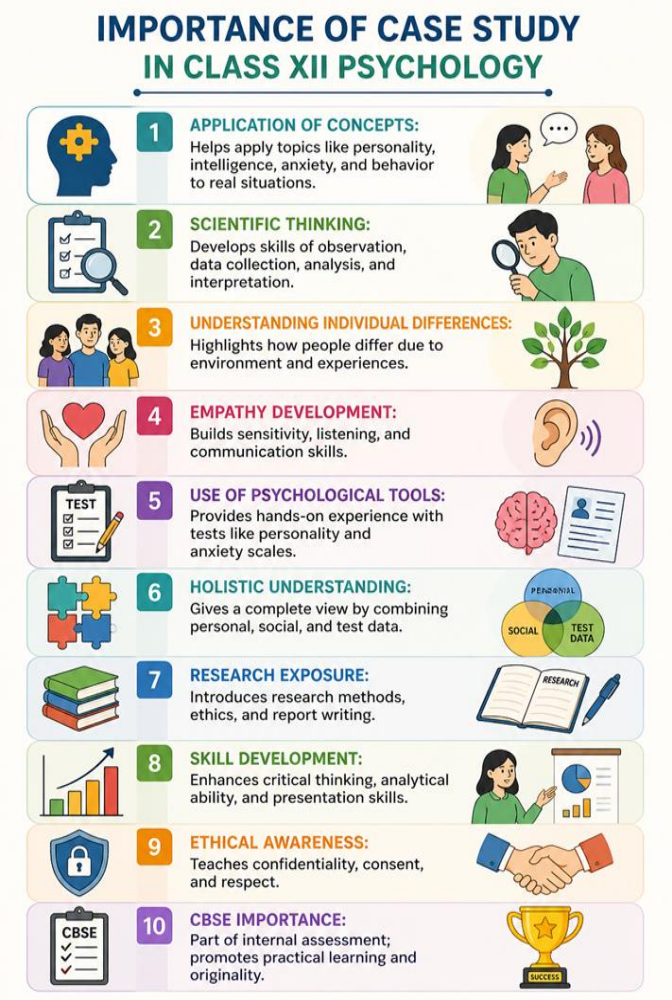
10. Habits, Interests, and Talents

11. Interview with the Subject

- Key questions and summarized responses
- Observations during interview

12. Interview with Significant Others

- Parent/teacher/friend
- Cross-verification of behavior



13. Psychological Test Administration

Include any 2–3 standardized tools such as:	**For each test:**
• Maudsley Personality Inventory (MPI) • Sinha's Comprehensive Anxiety Test (SCAT) • Self-Concept Questionnaire • Adjustment Inventory for School Students (AISS)	• Aim • Procedure • Scoring • Result • Interpretation

14. Observation Report

- Behavior
- Body language
- Emotional responses

15. Analysis & Interpretation

- Combine:
  - Interview findings
  - Test results
  - Observations
- Give a psychological explanation

16. Conclusion

17. Suggestions / Recommendations

- Practical improvements for the subject
- Based on findings

18. Ethical Considerations

19. Limitations of the Study

20. Bibliography

Rubrics for Project File & Case Profile (10 Marks)

The examiners evaluate the file based on the following criteria:

- Relevance and Accuracy (3 Marks): Does the project topic directly relate to psychology (e.g., bullying, mental health, social media impact, coping with stress)? Is the information accurate and legally/ethically sound?
- Research & Case Study Quality (3 Marks):
  - Case Profile: In-depth analysis of an individual using interviews, observation, and relevant psychological tests.
  - Data Collection: Use of reliable methods like questionnaires, surveys, or interviews (at least 10 members suggested for surveys).
- Technique of Presentation (4 Marks):
  - Structure: Proper, organized file with a certificate, acknowledgement, index, objectives, methodology, analysis, and bibliography.
  - Documentation: Inclusion of pictures, tables, graphs, and a copy of the questionnaire used.
  - Quality: Neat handwriting, proper formatting, and lack of spelling errors

ARTIFICIAL INTELLIGENCE

Activity 1: Capstone Project Work (to be done on A3 sheet)

Select a real-world problem such as:

- Pollution analysis
- Student performance analysis
- Social media addiction
- Water conservation
- Fitness tracking

Activity 2: AI Tool Activity (to be done on A3 Sheet)
Use any AI image recognition tool such as:

- Google Lens
- Teachable Machine

Identify objects from images and note observations with colourful images.

Activity 3: Infographic Design (to be done on Canvas and takeout the coloured print out)
Create an infographic on:

- Climate Change
- AI in Education
- Digital Safety
- Pollution analysis

Activity 4: Python Programs
(Practical File work to be done in the online Google Word File and share that file directly on kanchan.chowdhary@imperialheritageschool.com)

Input & output (Screenshot) both to be included in the file.

1. Create a numpy array and then split it into 2 equal parts. Display both parts.
2. Write a numpy program to check that none of the elements of a given array are zero.
3. Write the Python code to create a pandas data frame using any sequence data type.
    a. display the data frame
    b. display first 5 records
    c. display last 10 records
    d. display the number of missing values in the data set.
4. Demonstrate Train Test Split in linear regression.
5. Write a code for loading and displaying images in OpenCV using Colab.
6. Write a code to convert an image into grayscale.
7. Write a code to detect edges in the image.
8. Write a programme for the visualization of the regression line
9. Write a programme to predict GPA score after entering s SAT scores.
10. Write a program to create both Rank 1 and Rank 2 arrays using NumPy.
11. Create a data frame and apply the head and tail functions.
12. Program creates for extract specific portions using slicing
13. Write a program to convert the list into a pandas dataframe
14. Write a program to add columns to the data frame
15. Write the program to import data from CSV to a DataFrame

Activity 5: Do the revision assignment in the notebook uploaded on ERP.

PHYSICAL EDUCATION

The students are supposed to make a project file as per the details given below.

Instructions:

- This project needs to be done on one side of ruled paper and the other side of the plain paper provided in your Lab Manual (physical education practical file).
- The Lab Manual has to be covered with a brown paper cover sheet.
- Inside the Lab Manual, you may use coloured pens, but keep it colourful without making it too flashy, a clean and professional look is best.

Cover Page of the Project:

On white paper, it has to be pasted outside on the brown paper cover and should be printed neatly and clearly as mentioned below: -

Title (e.g., "Physical Education Practical File–048")
Session: 2026–27 (Academic Year)
School Name:
Your Name:
Class and Section:
Roll No: For XII class, Board Exam Roll Number.

Second Page: Index

- You have to complete the Index according to the details given in your Lab Manual. No page should be left blank in the Index.

Inside the File – Topics:

- Write all fitness test administrations with details, including pasted coloured pictures (SAI Khelo India Test / H.P.E. Tests) and Brockport Physical Fitness Test also.
- Write the procedure for Asanas, their benefits, and contraindications for any two Asanas for each lifestyle disease (obesity, diabetes, asthma, hypertension, and back pain), with coloured pictures ($2 \times 5 = 10$; at least 10 yoga postures).
- Write about any one of the following: the IOA (Indian Olympic Association) sport/game of your choice. Include a labelled diagram of the field and equipment, along with rules, terminologies, and skills associated with the game. And paste the coloured photograph of related sports equipment.

NOTE: - No black & White photos allowed in physical education Lab manual (practical file).