



**BANYAN TREE SCHOOL, LODHI ROAD
HOLIDAY HOMEWORK (2026-27)
CLASS XII**

SUBJECT: ENGLISH

Topics for the Project

- a. Linguistic chauvinism
- b. Child labour
- c. Marginalised communities
- d. Gender Inequality
- e. Psychological study of fear

Instructions:

- Each student must complete ONE project on any one topic.
- The report should be handwritten on A4 size sheets.
- The project should be spiral bound.
- The Project-Portfolio may include the following:
 - Cover page, with title of project, school details/details of students.
 - Statement of purpose/objectives/goals
 - Certificate of completion under the guidance of the teacher.
 - Students Action Plan for the completion of assigned tasks.

Materials such as scripts for the theatre/role play, questionnaires for interview, written assignments, essays, survey-reports and other material evidence of learning progress and academic accomplishment.

The 800-1000 words essay/Script/Report.

Student/group reflections.

If possible, Photographs that capture the positive learning experiences of the student(s).

List of resources/bibliograph

BANYAN TREE SCHOOL, LODHI ROAD






SESSION 2026-27

HOLIDAY HOMEWORK ASSESSMENT RUBRIC

CLASS XII

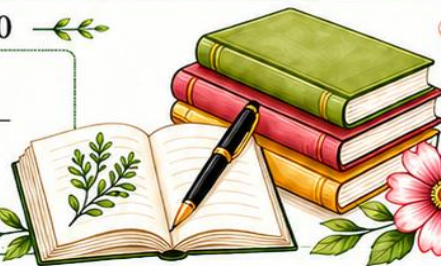
Student's Name: _____

Class/Sec: _____

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)	Marks Awarded
 Critical Thinking & Analysis	Insightful, original, well-analysed responses; shows deep understanding	Good analysis with relevant insights	Basic understanding with limited analysis	Lacks depth and critical approach	____ /4
 Content Quality	Highly relevant, well-structured, detailed and well-supported	Mostly relevant with adequate details	Some gaps in content and support	Poor content, irrelevant or inadequate information	____ /4
 Writing & Expression	Excellent fluency, vocabulary and grammar; ideas expressed clearly	Good expression with minor errors	Frequent errors in grammar and vocabulary	Weak language and unclear expression	____ /4
 Presentation & Organisation	Neat, well-structured, creative, visually appealing and well-organised	Well-organised with minor issues	Average presentation and organisation	Disorganised, lack of creativity	____ /4
 Completion & Effort	All work complete with sincere effort, on time and self-initiated	Most work completed with good effort	Partial completion with limited effort	Incomplete work with little or no effort	____ /4

Total Marks: _____ /20

Teacher's Remarks:



SUBJECT: MATHEMATICS

CH-1 Relation and functions

MCQ

1. The function $f : \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = x - 4$
- (A) Bijective (B) Surjective but not Injective
(C) Injective but not Surjective (D) Neither Surjective nor Injective
2. The value of $\cos^{-1}(-1) - \sin^{-1}(1)$ is
- (A) π (B) $\frac{\pi}{2}$ (C) $\frac{3\pi}{2}$ (D) $-\frac{3\pi}{2}$
3. Let R be a relation on the set N of Natural numbers defined by nRm if n divides m. Then R is
- (a) Reflexive and symmetric (b) Transitive and Symmetric
(c) Equivalence relation (d) Reflexive, Transitive but not Symmetric.
4. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = x^2 + 1$, then the pre image of 10 is
- (a) {3} (b) {-3} (c) {3,-3} (d) \emptyset
5. A set A has 3 elements and a set B has 4 elements. The number of injective function that can be defined from A to B is
- (a) 144 (b) 12 (c) 24 (d) 64
6. Maximum number of equivalence relation on the set $A = \{1,2,3\}$ are
- (a) 1 (b) 2 (c) 3 (d) 5

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. Assertion (A): The relation $f : \{1,2,3, 4\} \rightarrow \{x, y, z, p\}$ defined by $f = \{(1, x), (2, y), (3,z)\}$ is a bijective function.

Reason (R): The function $f : \{1,2,3\} \rightarrow \{x, y, z, p\}$ such that $f = \{(1, x), (2, y), (3, z)\}$ is one-one.

10. Assertion (A) : $f: \mathbb{N} \rightarrow \mathbb{N}$ given by $f(x)=5x$ is injective but not surjective
Reason (R) : If co-domain \neq range, then the function is not surjective

11. Assertion (A) : The relation R in the set $\{1,2,3\}$ given by $R = \{(1,1),(2,2),(3,3),(1,2),(2,3)\}$ is an equivalence relation
Reason (R) : A relation R is said to an equivalence relation if R is reflexive, symmetric and transitive.
12. Assertion (A) : Let $A = \{1, 2, 3,4,5\}$ and $B = \{a, b\}$. Then the number of surjections from A into B is 32.
Reason (R) : The number of functions that can be defined from $A = \{1, 2, 3,4,5\}$ to $B = \{a, b\}$ is 32
13. Assertion(A) : $\sin^{-1}(\sin x) = x$
Reason (R) : Any value in the range of principal value branch is called principal value of that inverse trigonometric function.
14. Assertion(A): The relation $R = \{(1, 2)\}$ on the set $A = \{1, 2, 3\}$ is transitive.
Reasoning (R): A relation R on a non-empty set A is said to be transitive if $(a, b), (b, c) \in R \Rightarrow (a, c) \in R$, for all $a, b, c \in A$.

SHORT ANSWER TYPE QUESTIONS

Q.1 Let R be the relation in the set Z of integers given by $R = \{(a, b) : 2 \text{ divides } a - b\}$. Show that the

relation R transitive? Write the equivalence class [0]

Q.2 Show that the relation S in the set $A = \{x \in \mathbb{Z} : 0 \leq x \leq 12\}$ given by $S = \{(a, b) : a, b \in \mathbb{Z}, |a - b| \text{ is divisible by } 4\}$ is an equivalence relation. Also find the equivalence class [1].

Q.3 Show that the relation R defined by $(a, b)R(c, d) \Leftrightarrow a + d = b + c$ on the set $\mathbb{N} \times \mathbb{N}$ is an equivalence relation. Also, find the equivalence classes [(2,3)] and [(1,3)].

Q.4 Show that the relation R in the set R of real numbers, defined as $R = \{(a, b) : a \leq b^2\}$ neither

reflexive nor symmetric nor transitive.

Q.5 If $A = \{S, D\}$, $B = \{1, 2, 3, 4, 5, 6\}$

(i) A relation, $R: B \rightarrow B$ be defined by $R = \{(x, y) : y \text{ is a multiple of } x, x > 1\}$. List all the elements of R.

(ii) Find total number of relations from $A \rightarrow B$ and total number of functions from $B \rightarrow A$.

(iii) Let $R: B \rightarrow B$ be defined by $R = \{(1,1), (1,2), (5, 4), (3,3), (6,6), (2, 1), (4, 5), (2, 2)\}$, then check whether R is reflexive, symmetric or transitive.

(iv) For relation R, $R: B \rightarrow A$, defined as $R = \{(x, y) : |x - y| \text{ is a multiple of } 3\}$ check whether R is reflexive, symmetric or transitive .

Q.6 Show that the function $f : \mathbb{R} \rightarrow \mathbb{R}$ given by $f(x) = ax + b$, where $a, b \in \mathbb{R}$, $a \neq 0$ is a bijection.

Q.7 Show that the function $f : \mathbb{R} \rightarrow \mathbb{R}$ given by $f(x) = \cos x$ for all $x \in \mathbb{R}$, is neither one-one nor onto.

Q.8. Let $A = \mathbb{R} - \{2\}$ and $B = \mathbb{R} - \{1\}$. If $f : A \rightarrow B$ is a mapping defined by $f(x) = \frac{x-1}{x-2}$

show that f is bijective.

Q.9 Classify the following functions as injection, surjection or bijection:

(i) $f : \mathbb{R} \rightarrow \mathbb{R}$, defined by $f(x) = |x|$ (ii) $f : \mathbb{Z} \rightarrow \mathbb{Z}$, defined by $f(x) = x^2 + x$

(iii) $f : \mathbb{Z} \rightarrow \mathbb{Z}$, defined by $f(x) = x - 5$ (iv) $f : \mathbb{R} \rightarrow \mathbb{R}$, defined by $f(x) = \sin x$

(v) $f : \mathbb{R} \rightarrow \mathbb{R}$, defined by $f(x) = x^3 - x$ (vi) $f : \mathbb{Q} - \{3\} \rightarrow \mathbb{Q}$, defined by $f(x) = \frac{2x+3}{x-3}$ (vii)

$f : \mathbb{R} \rightarrow \mathbb{R}$, defined by $f(x) = 3 - 4x$ (viii) $f : \mathbb{R} \rightarrow \mathbb{R}$, defined by $f(x) = 1 + x^2$

Q.10 Let $A = \{1, 2, 3\}$, $B = \{4, 5, 6, 7\}$ and let $f = \{(1, 4), (2, 5), (3, 6)\}$ be a function from A to B . State whether f is one-one or not.

CH-2 Inverse Trigonometry

Q.11 For the principal values, evaluate the following :

(i) $\tan^{-1}(-1) + \cos^{-1}\left(-\frac{1}{\sqrt{2}}\right)$

(ii) $\sin^{-1}\left(-\frac{1}{2}\right) + 2\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

Q.12 Evaluate each of the following :

(i) $\sin^{-1}\left(\sin \frac{\pi}{3}\right)$ (ii) $\cos^{-1}\left(\cos \frac{2\pi}{3}\right)$

Q.13 Express each of the following in the simplest form :

(i) $\left\{ \frac{\sqrt{1-\cos x}}{1+\cos x} \right\}, -\pi < x < \pi$

(ii) $\tan^{-1}\left(\frac{\cos x}{1+\sin x}\right), -\frac{\pi}{2} < x < \frac{\pi}{2}$

(iii) $\tan^{-1}\left(\frac{\cos x}{1-\sin x}\right), -\frac{\pi}{2} < x < \frac{\pi}{2}$

(iv) $\tan^{-1}\left(\frac{\cos x - \sin x}{\cos x + \sin x}\right), -\frac{\pi}{4} < x < \frac{\pi}{4}$

Q.14 Prove that :

$$\tan^{-1} x + \tan^{-1}\left(\frac{2x}{1-x^2}\right) = \tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right), |x| < \frac{1}{\sqrt{3}}$$

Q.15 Prove that :

(i) $\tan^{-1}\left\{\frac{\sqrt{1+\cos x} + \sqrt{1-\cos x}}{\sqrt{1+\cos x} - \sqrt{1-\cos x}}\right\} = \frac{\pi}{4} - \frac{x}{2}, \text{ if } \pi < x < \frac{3\pi}{2}$

(ii) $\cot^{-1}\left\{\frac{\sqrt{1+\sin x} + \sqrt{1-\sin x}}{\sqrt{1+\sin x} - \sqrt{1-\sin x}}\right\} = \frac{\pi}{2} - \frac{x}{2}, \text{ if } \frac{\pi}{2} < x < \pi$

Q.16 Prove that : $\sin[\cot^{-1}\{\cos(\tan^{-1} x)\}] = \sqrt{\frac{x^2 + 1}{x^2 + 2}}$

Q.17 Write each of the following in the simplest form :

(i) $\tan^{-1}\{\sqrt{1+x^2} - x\}, x \in \mathbb{R}$

(ii) $\tan^{-1}\left\{\frac{\sqrt{1+x^2} + 1}{x}\right\}, x \neq 0$

(iii) $\tan^{-1}\sqrt{\frac{a-x}{a+x}}, -a < x < a$

CH-3 Matrices

Q.18 Find x, y, a and b if $\begin{bmatrix} 3x+4y & 2 & x-2y \\ a+b & 2a-b & -1 \end{bmatrix} = \begin{bmatrix} 2 & 2 & 4 \\ 5 & -5 & -1 \end{bmatrix}$

Q.19 Two farmers Ram Kishan and Gurcharan Singh cultivate only three varieties of rice namely Basmati, Permal and Naura. The sale (in Rs) of these varieties of rice by both the farmers in the month of September and October are given by the following matrices A and B

September sales (in Rs)			
Basmati	Permal	Naura	
10,000	20,000	30,000	Ram Kishan
50,000	30,000	10,000	Gurcharan Singh

$$A = \begin{bmatrix} 10,000 & 20,000 & 30,000 \\ 50,000 & 30,000 & 10,000 \end{bmatrix}$$

Basmati	Permal	Naura	
5,000	10,000	6,000	Ram Kishan
20,000	10,000	10,000	Gurcharan Singh

$$B = \begin{bmatrix} 5,000 & 10,000 & 6,000 \\ 20,000 & 10,000 & 10,000 \end{bmatrix}$$

Find :

- (i) What were the combined sales in September and October for each farmer in each variety.
- (ii) What was the change in sales from September to October ?
- (iii) If both farmers receive 2% profit on gross rupees sales, compute the profit for each farmer and for each variety sold in October.

Q.20 If $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$. Verify that $A^3 - 6A^2 + 9A - 4I = O$ and hence find A^{-1} .

Q.21 Find the inverse of each of the following matrices and verify that $A^{-1}A = I_3$.

$$(i) \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$$

$$(ii) \begin{bmatrix} 2 & 3 & 1 \\ 3 & 4 & 1 \\ 3 & 7 & 2 \end{bmatrix}$$

Q.22 Solve the following system of equations by matrix method :

$$(i) \quad x + y - z = 3$$

$$(ii) \quad \frac{2}{x} - \frac{3}{y} + \frac{3}{z} = 10$$

$$2x + 3y + z = 10$$

$$\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 10$$

$$3x - y - 7z = 1$$

$$\frac{3}{x} - \frac{1}{y} + \frac{2}{z} = 13$$

Q.23 (i) If $A = \begin{bmatrix} 1 & -2 & 0 \\ 2 & 1 & 3 \\ 0 & -2 & 1 \end{bmatrix}$, find A^{-1} . Using A^{-1} , solve the system of linear equations

$$x - 2y = 10, 2x + y + 3z = 8, -2y + z = 7$$

(ii) $A = \begin{bmatrix} 3 & -4 & 2 \\ 2 & 3 & 5 \\ 1 & 0 & 1 \end{bmatrix}$, find A^{-1} and hence solve the following system of equations:

$$3x - 4y + 2z = -1, 2x + 3y + 5z = 7, x + z = 2$$

(iii) $A = \begin{bmatrix} 1 & -2 & 0 \\ 2 & 1 & 3 \\ 0 & -2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 7 & 2 & -3 \\ -2 & 1 & -3 \\ -4 & 2 & 5 \end{bmatrix}$, find AB . Hence, solve the system of

$$\text{equations: } x - 2y = 10, 2x + y + 3z = 8 \text{ and } -2y + z = 7$$

CONTINUITY AND DIFFERENTIABILITY

1. Discuss the continuity of the identity function $f(x) = x$.

2. Discuss the continuity of the function $f(x) = \begin{cases} 2x-3, & \text{if } x < 2 \\ 5x-9, & \text{if } x \geq 2 \end{cases}$.

3. Find the points of discontinuity of the function f defined by $f(x) = \begin{cases} 3, & \text{if } 0 \leq x \leq 1 \\ 4, & \text{if } 1 < x < 3 \\ 5, & \text{if } 3 \leq x \leq 10 \end{cases}$

4. Find the number of points at which the function $f(x) = \frac{9-x^2}{9x-x^3}$ is discontinuous.

5. Find the value of k for which $f(x) = \begin{cases} \frac{\sin 2x}{5x} & , x \neq 0 \\ k & , x = 0 \end{cases}$ is continuous at $x = 0$.

6. Find the value of k for which $f(x) = \begin{cases} \frac{1 - \cos 4x}{2x^2} & , x \neq 0 \\ k & , x = 0 \end{cases}$ is continuous at $x = 0$.

7. The value of k for which $f(x) = \begin{cases} \frac{kx}{|x|} & , \text{if } x < 0 \\ 3 & , \text{if } x \geq 0 \end{cases}$ is continuous at $x = 0$ is :

8. Find : $\frac{d}{dx} \left[\sin^{-1} \left(\frac{\sin x + \cos x}{\sqrt{2}} \right) \right]$.

9. Find : $\frac{d}{dx} \left[\log \sin \sqrt{x^2 + 1} \right]$.

10. Find : $\frac{d}{dx} [2^{-x}]$

LONG ANSWER TYPE QUESTIONS (3 or 5 MARKS QUESTIONS)

1. Find the value of k for which $f(x) = \begin{cases} \frac{\sqrt{1+kx} - \sqrt{1-kx}}{x} & , -1 \leq x < 0 \\ \frac{2x+1}{x-1} & , 0 \leq x \leq 1 \end{cases}$ is continuous at $x = 0$.

2. Find the value of k for which $f(x) = \begin{cases} \frac{(x+3)^2 - 36}{x-3} & , \text{if } x \neq 0 \\ k & , \text{if } x = 0 \end{cases}$ is continuous at $x = 3$.

3. Find the value of k for which $f(x) = \begin{cases} kx + 1 & , \text{if } x \leq \pi \\ \cos x & , \text{if } x > \pi \end{cases}$ is continuous at $x = \pi$.

4. Find the value of k for which $f(x) = \begin{cases} \frac{\sin 5x}{x^2 + 2x} & , \text{if } x \neq 0 \\ k + 1 & , \text{if } x = 0 \end{cases}$ is continuous at $x = 0$.

5. If $f(x) = \begin{cases} 3ax + b & , \text{if } x > 1 \\ 11 & , \text{if } x = 1 \\ 5ax - 2b & , \text{if } x < 1 \end{cases}$, continuous at $x = 1$, find the values of a and b.

6. If $f(x) = \begin{cases} \frac{k \cos x}{\pi - 2x} & , x \neq \frac{\pi}{2} \\ 3 & , x = \frac{\pi}{2} \end{cases}$, is continuous at $x = \frac{\pi}{2}$, find k.

7. Show that the function f defined by $f(x) = \begin{cases} 3x - 2 & , 0 < x \leq 1 \\ 2x^2 - x & , 1 < x \leq 2 \\ 5x - 4 & , x > 2 \end{cases}$ is continuous at $x = 2$ but

not differentiable.

8. Find the relationship between a and b so that the function defined by

$$f(x) = \begin{cases} ax + 1 & , \text{if } x \leq 3 \\ bx + 3 & , \text{if } x > 3 \end{cases} \text{ is continuous at } x = 3.$$

9. For what value of λ the function $f(x) = \begin{cases} \lambda(x^2 - 2x) & , \text{if } x \leq 0 \\ 4x + 1 & , \text{if } x > 0 \end{cases}$ is continuous at $x = 0$.

10. If the function $f(x) = \begin{cases} x^2 + ax + b, & \text{if } 0 \leq x < 2 \\ 3x + 2, & \text{if } 2 \leq x \leq 4 \\ 2ax + 5b, & \text{if } 4 < x \leq 8 \end{cases}$ is continuous on $[0, 8]$,

find the value of a & b .

ACTIVITY FILE

Prepare activity file properly covered and decorated.

Index must be completed. Write the objective of activity under the heading Topic.

Do following first three activities related to first three chapters –

- To verify that the relation R in the set L of all lines in a plane, defined by $R = \{(l, m) : l \parallel m\}$ is an equivalence relation.
- To demonstrate a function which is not one-one but is onto.
- To draw the graph of $\sin^{-1} x$, using the graph of $\sin x$ and demonstrate the concept of mirror reflection (about the line $y = x$).

NOTE:- Solve all these questions in A-4 size papers and submit in a file

SUBJECT: ACCOUNTANCY

1. Project Work One specific project based on financial statement analysis of a company covering any two aspects from the following: 1. Comparative and common size financial statements 2. Accounting Ratios 3. Segment Reports 4. Cash Flow Statements
2. Worksheets (Ratio Analysis, Cash flow statements, Comparative and common size financial statements.

SUBJECT: BUSINESS STUDIES

Students are required to make any one project from the following.

1. Principles of Management

- Select a real business organisation

- Identify and explain principles of management applied in that organisation
- Show practical application, not just theory.

2. Business Environment

- Study the impact of business environment on an organisation
- Include:
 - Meaning & importance of business environment
 - Types: Economic, Social, Technological, Political, Legal
 - Real-life examples (e.g., government policies, digitalisation, GST impact)
- **Focus:** How environment influences business decisions

3. Stock Exchange (Financial Market)

- Select a company listed on stock exchange
- Include:
 - Meaning & functions of stock exchange
 - Company profile
 - Share price tracking
 - Factors affecting price movement
- Skill Developed: Financial awareness

4. Marketing Management

- Choose a product/company
- Analyse the 4Ps of Marketing:
 - Product
 - Price
 - Place
 - Promotion
- Include advertisements, packaging, branding analysis
- **Focus:** Real-life application of marketing strategies

SUBJECT: ENTREPRENEURSHIP

Worksheets (Entrepreneurial Opportunity, Entrepreneurial Planning).

Project Work: Market Survey (As per the CBSE guidelines discussed in class)

SUBJECT: ECONOMICS

Read the following chapters carefully and learn the key points: -

- Introduction
- National income and related aggregates'
- Methods of calculating national income
- Money and Banking

1. Complete your project on the topics allotted in the class:
2. Format for presentation of the Project
3. External cover page
4. Acknowledgement
5. Certificate
6. Introduction of the topic
7. Details of the Topic (causes, consequences/ remedies)
8. Diagrammatic presentation
9. Numerical Explanation (if any)
10. Pros and cons of the economic event/ happening (if any)
11. Application of the concept
12. Student's own views/perception/opinion/ learning/ from the topic
13. Feedback sheet
14. Bibliography

For better understanding please refer to the link:-

https://cbseacademic.nic.in/web_material/CurriculumMain27/SecPart2/Economics_SecP2_2026-27.pdf

Marking Scheme: Marks are suggested to be given as -

S.no	Heading	Marks
1	Relevance of the topic	3
2	Knowledge content/ Research work	6
3	Presentation Technique	3
4	Viva Voca	8
5	Total	20

B) Worksheets will be uploaded on schoolpad.

SUBJECT: PHYSICS

1. Investigatory Project Work (As per the CBSE guidelines)

General Instructions/Guidelines for Presentation of Project Report

A project should have the following headings:

- Cover Page - School Logo, title of the project and Student details (Name, Class/Section and Session)
 - Index (Make a table having S. No. , Topic, Page No.)
 - Certificate
 - Acknowledgement
 - Introduction
 - Objective/Aim of the Project
 - Apparatus/Materials Used
 - Theory (Research work on the basis of the guidelines under each topics)
 - Set up Diagram
 - Procedure
 - Observations (Presentation of evidence with data, images, graphical representation etc. after performing the experiment)
 - Calculations
 - Conclusion/Result/Inference
 - Precautions
 - Sources of Error
 - Bibliography/ References
2. Complete the Practical File as well as Activity File work as per the instructions given in the Class.

SUBJECT: CHEMISTRY

1. Investigatory Project Work (As per the CBSE guidelines)

General Instructions/Guidelines for Presentation of Project Report

A project should have the following components

- Cover Page - School Logo, title of the project and Student details (Name, Class/Section and Session) as mentioned in the sample report shared.
- Index (Make a table having S. No. , Topic, Page No.)
- Certificate
- Acknowledgement
- Introduction
- Objective/Aim of the Project or Investigation
- Apparatus/Materials Used
- Theory (Research work on the basis of the guidelines under each topics)
- Procedure

- Observations (Presentation of evidence with data, images, graphical representation etc. after performing the experiment)
- Calculations
- Conclusion/Result/Inference
- Precautions
- Bibliography/ References

Note - Draft to be submitted

2. **Worksheet of Chapter 2- Electrochemistry (Submission date 06/07/26)**
3. **Practical File completion for Volumetric titration experiment of KMnO₄ with Oxalic acid .**

SUBJECT: BIOLOGY

Part A – Lab Records Completion

Tasks

1. Complete Practical Record Book

- o Write aim, principle, procedure, observations, and conclusion for each experiment done so far.
- o Include neat, labeled diagrams for:
 - Slide preparation (onion root tips, pollen grains)
 - Spotting exercises (specimens, charts, models)
 - Physiology experiments (DNA extraction)
 - Ecology-plant density and frequency.

2. Organize Records

- o Ensure index page is updated.
- o Cross-check with CBSE list of mandatory experiments.

Part B – Investigatory Project

Guidelines

1. Choose a Topic (relevant to grade 11-12 syllabus)
2. Project Report Structure
 - o Title page
 - o Certificate & acknowledgement
 - o Introduction & objectives
 - o Materials & methodology
 - o Observations (tables, graphs, photos if possible)
 - o Results & discussion
 - o Conclusion & references
3. Submission Requirements

- o Typed or neatly handwritten report (30–50 pages).
- o Attach supporting visuals (charts, photos, diagrams).
- o Submit by first week after reopening.

Assessment Criteria

- Lab Records: Completeness, neatness, accuracy (4 marks).
- Investigatory Project: Originality, scientific method, presentation (5 marks).
- Criteria of assessment for both: Creativity, clarity, relevance.

SUBJECT: COMPUTER SCIENCE

Data Handling

1. Create a panda's series from a dictionary of values and and array
2. Given a Series, print all the elements that are above the 75th percentile.
3. Create a Data Frame quarterly sales where each row contains the item category, item name, and expenditure. Group the rows by the category and print the total expenditure per category.
4. Create a data frame for examination result and display row labels, column labels data types of each column and the dimensions
5. Filter out rows based on different criteria such as duplicate rows.
6. Importing and exporting data between pandas and CSV file

Visualization

1. Given the school result data, analyses the performance of the students on different parameters, e.g subject wise or class wise.
2. For the Data frames created above, analyze, and plot appropriate charts with title and legend.
3. Take data of your interest from an open source (e.g. data.gov.in), aggregate and summarize it. Then plot it using different plotting functions of the Matplotlib library.

Data Management

1. Create a student table with the student id, name, and marks as attributes where the student id is the primary key.
2. Insert the details of a new student in the above table.
3. Delete the details of a student in the above table.
4. Use the select command to get the details of the students with marks more than 80.
5. Find the min, max, sum, and average of the marks in a student marks table.
6. Find the total number of customers from each country in the table (customer ID, customer Name, country) using group by.
7. Write a SQL query to order the (student ID, marks) table in descending order of the marks.

Project Work

The aim of the class project is to create tangible and useful IT application. The learner may identify a real-world problem by exploring the environment. e.g. Students can visit shops/business places, communities or other organizations in their localities and enquire about the functioning of the organization, and how data are generated, stored, and managed. The learner can take data stored in csv or database file and analyze using Python libraries and generate appropriate charts to visualize. Learners can use Python libraries of their choice to develop software for their school or any other social good. Learners should be sensitized to avoid plagiarism and violation of copyright issues while working on projects.

SUBJECT: INFORMATICS PRACTICES

(DO ALL PRACTICALS WITH OUTPUT SCREENSHOT IN YOUR CS FILE)

- Read a text file line by line and display each word separated by a #.
- Read a text file and display the number of vowels/consonants/uppercase/lowercase characters in the file.
 - Remove all the lines that contain the character 'a' in a file and write it to another file.
 - Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
 - Create a binary file with roll number, name and marks. Input a roll number and update the marks.
 - Write a random number generator that generates random numbers between 1 and 6 (simulates a dice)
- Write a Python program to implement a stack using list.
 - Create a CSV file by entering user-id and password, read and search the password for given userid. Database Management
 - Create a student table and insert data. Implement the following SQL commands on the student table:
 - o ALTER table to add new attributes / modify data type / drop attribute
 - o UPDATE table to modify data
 - o ORDER By to display data in ascending / descending order
 - o DELETE to remove tuple(s)
 - o GROUP BY and find the min, max, sum, count and average.

Project- The aim of the class project is to create something that is tangible and useful using Python file handling/ Python-SQL connectivity. This should be done in groups of two. The aim here is to find a real world problem that is worthwhile to solve. Students are encouraged to visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filing GST claims, then students can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. Students can be extremely creative here. They can use a wide variety of Python libraries to create user friendly applications such as games, software for their school, software for their

disabled fellow students, and mobile applications, of course to do some of these projects, some additional learning is required; this should be encouraged. Students should know how to teach themselves. The students should be sensitized to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.

SUBJECT: TYPOGRAPHY & COMPUTER APPLICATION (TCA)

1. Branding Project (Main Task)

- Create a Brand Identity using creative text design
- Choose a theme: Cafe / Clothing Brand / Tech Company / NGO
- Design:
 - Logo (text-based)
 - Tagline using suitable font
 - Focus on font selection, spacing, alignment, and visual hierarchy

2. Digital Poster Design

- Create a creative poster (Digital preferred)
- Theme: Social Awareness / Advertising / Minimalist Design
- Use:
 - Different font styles
 - Proper color scheme & layout principles

3. Design Analysis (Research Work)

- Select 2 famous brand logos
- Analyze:
 - Font style used
 - Why it is effective
 - How text design reflects brand identity

4. Practical Design Exercise

- Design one paragraph layout using:
 - Proper alignment (left/center/justify)
 - Correct spacing (kerning, leading)
 - Show before and after improvement

5. Portfolio Compilation (Important)

- Compile all work in a neat portfolio (file/digital)
- Include:
 - Cover page
 - All tasks
 - Brief description of each work.

SUBJECT: HISTORY

1. Comprehensive History Project:

- **Task:** Continue working on your chosen research project.
- **Deliverable:** Bring the **complete file** upon school reopening.
- **Requirement:** The project must be a **minimum of 60 pages**.
- **Note:** Please **do not get it spiral-bound** yet; the draft will be reviewed first.

2. Academic Revision & Practice:

- **Task:** Solve the provided **Question Bank/Booklet** for the first three chapters:
 1. *Bricks, Beads and Bones* (Harappan Civilization)
 2. *Kings, Farmers and Towns* (Early States & Economies)
 3. *Kinship, Caste and Class* (Early Societies)
- **Format:** Work must be done neatly in your **Question-Answer Notebook**.
- **Assessment:** Be prepared for a **Unit Test** on these three chapters immediately upon the start of the session.

3. Literary Analysis:

- **Task:** Read the shared book "**Unstoppable Us**" by Yuval Noah Harari.
- **Assignment:** Write a **two-page critical summary** in your own words.
- **Focus:** Specifically analyse how the author simplifies complex historical transitions and human evolution for a general audience.

SUBJECT: SOCIOLOGY

PROJECT WORK	
	Max. Marks: 20
C. Project undertaken during the academic year at school level	15 Marks
1. Introduction -2 Marks	
2. Statement of Purpose – 2 Marks	
3. Research Question – 2 Marks	
4. Methodology – 3 Marks	
5. Data Analysis – 4 Marks	
6. Conclusion – 2 Marks	
D. Viva – based on the project work	05 Marks

Expected Checklist for the Project Work:

- Introduction of topic/title
- Identifying the causes, events, consequences and/or remedies
- Various stakeholders and effect on each of them
- Advantages and disadvantages of situations or issues identified
- Short-term and long-term implications of strategies suggested during research
- Validity, reliability, appropriateness, and relevance of data used for research work and for presentation in the project file

- Presentation and writing that is succinct and coherent in project file
- Citation of the materials referred to, in the file in footnotes, resources section, bibliography etc.

Assessment of Project Work:

- Project Work has broadly the following phases: Synopsis/ Initiation, Data Collection, Data Analysis and Interpretation, Conclusion.
- The aspects of the project work to be covered by students can be assessed during the academic year.

SUBJECT: POLITICAL SCIENCE

Political Science Project Allocation

S.No	Student Name	Project Topic
1	Ayesha Verma	End of Bipolarity
2	Adiba	Contemporary Centres of Power
3	Adwita Prusty	Rise of China as a Global Power
4	Drishiti	European Union as a Political & Economic Power
5	Juveriyah Aiman	US Hegemony in World Politics
6	Kartik	Alternative Centres of Power
7	Lakshay Vashist	ASEAN and Regional Cooperation
8	Mohd Owais	South Asia in the Post-Cold War Era
9	Pawan Yadav	India-Pakistan Relations
10	Simran	India-China Relations
11	Khushboo Tiwari	United Nations: Structure & Functions
12	Ussaid Khan	Role of UN in Peacekeeping
13	Insha Irshad	Security in the Contemporary World
14	Khwaish Shankla	Traditional vs Non-Traditional Security
15	Mahad Nadeem	Environment and Natural Resources

16	Rounaq Kashyap	Globalisation: Meaning & Features
17	Sumneet Kaur	Anti-Globalisation Movements
18	Ufaq Ahmad	India and Globalisation
19	Mohd Yasar	Challenges of Nation Building
20	Zaiff Raza	Partition and Its Consequences
21	Sahabiya Ali	Era of One-Party Dominance
22	Brahmjot Singh	Congress System
23	Khushi	Politics of Planned Development
24	Mohammad Afnan Hussain	India's Foreign Policy
25	Anasha Zafar	India-China War (1962)
26	Aishwarya Nagar	India-Pakistan Wars
27	Hanni Siddiqui	Emergency (1975–77)
28	Parul Saini	Rise of Opposition Parties
29	Mohd Haider Ali	Regional Aspirations
30	Saami Hashmi	Coalition Politics in India
31	Piyush Baisoya	Mandal Commission & Social Justice
32	Aayushman Mehra	New Economic Policy 1991 (LPG Reforms)

General Instructions

1. It should be a handwritten project on A4 size sheets.
2. It should be well researched and pictorial.
3. The project must have table of content.
4. It must include relevant information, facts and figures.
5. It should cover title page, acknowledgement, bibliography, headings and sub-headings.
6. Maintain neat presentation and proper margins.

Reflective Journal

Read the newspaper daily and prepare a reflective journal on highlighted issues in Indian polity.

1. Format should include observation and reflection.
2. It should be written in a small notebook.
3. Paste newspaper clippings of selected issues.
4. Write date-wise entries.
5. Use clear headings for each topic.
6. Maintain regularity and neatness.

Worksheet Questions

Chapter – Alternative Centres of Power

1. Write the full forms of: EU, ASEAN, OEEC, UNSC.
2. When were the following formed: OEEC, Council of Europe, European Economic Community, European Union?
3. What are the aims of European Union? OR Why was European Union formed?
4. What are the features of European Union?
5. Which factors brought about the formation of European Union?
6. How does EU exercise its economic, political, diplomatic and military influence?
7. Name the currency of EU.
8. Why was ASEAN formed?
9. When was ASEAN formed? OR Which development led to the creation of ASEAN?
10. Name the five founding member countries of ASEAN.
11. What do you know about Bangkok Declaration?
12. What were the objectives of ASEAN?
13. What is the present membership of ASEAN?
14. Name the five new members of ASEAN.
15. What is the term 'ASEAN way' used for?
16. How is ASEAN different from EU?
17. How has ASEAN broadened its objectives in 2003?
18. Name the three communities established by ASEAN.

Chapter – End of Bipolarity

1. Who was Gorbachev? Write a short note on him.
2. What was the Soviet system?
3. Mention the year and relevance of the breaking of the Berlin Wall.
4. What role did the World Bank play in integrating the Soviet states?
5. As a result of shock therapy, which economic system was gradually absorbed?
6. Mention two characteristics of the Soviet political system.
7. Mark the states that emerged from the Soviet Union on a political map of the world.
8. Mention areas of diplomacy between India and USSR.
9. Bring out the difference between multipolar, bipolar and unipolar world.
10. Mention any three features that distinguish the Soviet economy from that of a capitalist country like the US.

(STUDENTS ARE REQUIRED TO COMPLETE ALL QUESTIONS FROM BOTH WORKSHEETS IN THEIR NOTEBOOK).

SUBJECT: PSYCHOLOGY

Develop a case profile based on a selected psychological disorder and conduct an in-depth study using appropriate methods such as interviews, observation, and psychological tests.

For

this purpose, interview an individual aged between 14 - 17 years who has experienced depression, anxiety, or aggression. The study should focus on gathering a detailed psychosocial history, including the individual's background, mental health concerns, emotional and behavioral difficulties, coping strategies, and current stressors. Prepare a concise report summarizing the key findings of the case study and include a brief analysis of the psychological aspects observed, add a reflection on your experience of conducting the interview, highlighting any challenges faced and insights gained during the process.

SUBJECT: PHYSICAL ACTIVITY TRAINER

Make one project file on the following topics: -

1. Choose any one topic from Employability Skills.
2. Choose any one topic from Subject specific skills

Make Practical File on the following topics: -

1. Description of various Physical Fitness Test by assessing and evaluating your own score.

2. Write down the basic sports injuries with their prevention.
3. Write down about any one game with their rules and regulation with diagram.
4. Choose any one career option in physical education with their job profile.