The Lawrence School, Lovedale
HOLIDAY ASSIGNMENT - DECEMBER 2025

CLASS XI

ENGLISH

1. The Portrait of a Lady (Prose)

Project Topic: Memory Box or Collage

● Theme: Memories of Grandmother.

● Description: Create a memory box or collage that represents key moments from the story or the bond between the narrator and his grandmother. The box can include symbolic items such as a miniature portrait of the grandmother, a religious symbol, or natural elements (flowers, seeds, or leaves) that she cherished. The collage can feature pictures of the grandmother, the house, the narrator and his school, or scenes that evoke memories.

2. Mother's Day (Play)

Mother's Day Poem or Letter (Literary Art)

● Theme: A Tribute to My Mother.

● Description: Write a heartfelt poem or letter to your mother, expressing gratitude for her sacrifices, love, and care. The poem or letter can reflect on specific memories that are meaningful to you, such as moments when your mother supported or taught you valuable lessons.
● Artistic Element: You can decorate the letter or poem with small drawings or borders that enhance the sentiment. Consider using calligraphy or a creative font to make it visually appealing.

AND

Handmade Mother's Day Card (Craft + Visual Art)

● Theme: A Personalized Gift for Mom.

● Description: Create a handmade card that reflects your personal relationship with your mother. Use creative materials like colored paper, buttons, ribbons, and fabric to make the card unique. You can write a personal message on the inside, thanking her for the love and guidance she has given you.

3. After reading any book from the list provided, write a detailed book review in 500–700 words. Your review must include a creative book jacket

(cover design with title, author's name, and artwork) and should cover the following points:

- Brief summary of the plot
- Description of the setting (time and place)
- Detailed analysis of main characters and their development
- Major themes and messages of the book
- Personal opinion and critical evaluation
- Favorite quotes or scenes (optional)
- Recommendation: Who would you suggest this book to and why?

CURATED COMPILATIONS

- The Catcher in the Rye
- Lord of the Flies
- The Thorn Birds
- Gone with the Wind
- The Godfather
- Kane and Abel
- Siddhartha
- The Kite Runner
- The Power of Now
- Freakonomics
- Vagabonding

CLASSIC FAVOURITES NOVELS

- Moby Dick
- The Scarlet Letter
- The Great Gatsby
- To Kill a Mockingbird

TOP BRITISH NOVELS

- Pride and Prejudice
- Wuthering Heights
- Mayor of Casterbridge
- Oliver Twist
- Mill on the Floss
- Napolean Hill

BUSINESS STUDIES

- **THIS TASK IS PART OF THE PROJECT WORK.**
- **TO BE FURNISHED IN A SEPARATE PROJECT FILE.**
- **Students are required to select ANY TWO OF THE FOLLOWING TOPICS and prepare comprehensive projects incorporating thorough analysis and creative presentation.**

TOPICS

1. **Environmentally Sustainable Business Models**
   (Green manufacturing, recycling-based businesses)

2. **How Businesses Can Reduce Carbon Footprints**
   (Case study on manufacturing or service firms)

3. **Business Ethics in the Digital Age**
   (Data privacy, phishing, online fraud prevention)

ACCOUNTANCY

- THIS TASK IS PART OF THE PROJECT WORK.
- TO BE FURNISHED IN A SEPARATE PROJECT FILE.
- Students are required to select ANY THREE OF THE FOLLOWING TOPICS and prepare comprehensive projects incorporating thorough analysis and creative presentation.

TOPICS

1. Common Accounting Errors made by beginners & how to rectify them.
2. Designing a Mistake-Filled Trial Balance & Correcting It.
   (Students to create the errors and fix such errors)
3. Prepare Final Accounts of a Small Imaginary Business - Trading A/c, P&L A/c and Balance Sheet.
4. Why Financial Statements Matter for Investors & Banks.
5. Case Study: How Non-financial Items like - Ethics, sustainability, management decisions, Affect the Business Decisions – illustrate & explain.

A –Biodiversity Hotspots in India

Make a detailed report on **any one** of the major biodiversity hotspots in India from the given options.

   a) **The Himalayas**
   b) **Indo-Burma (extending through northeastern states of India,except Assam)**
   c) **The Western Ghats**
   d) **Sundaland (includes India's Nicobar islands)**

The report should focus on the following:

   I)   *Location Map*
   II)   *Ecosystem Biodiversity*
   III)   *Endemic species*
   IV)   *Role of human activities towards loss of biodiversity*
   V)   *Native people*
   VI)   *Conservation efforts*
   VII)   *Any other relevant information*
   VIII) *Conclusion/Way forward*

<div align="center">***OR***</div>

 B – Climate change

Make a detailed report on climate change. The report should follow the following sequence of headings:

   i)   *Introduction (definition of climate change)*
   ii)   *Causes of climate change*
   iii) *Effects of climate change*
   iv)   *Mitigation measures*
   v)   *Policy framework*
   vi)   *Conclusion/Way forward*

Instructions:

- The report is to be hand written and not to be copied from internet sources.
- It should not be more than 1000 words.
- Include any of the art forms into the topic (documents, designs with colors, sketching, painting, photographs, infographics etc)
- Use definition for key terms like climate, weather, greenhouse effect, global warming etc.
- Incorporate appropriate pictures wherever essential.

Research and Analysis Projects :

1.**Geopolitical Art Series:** Create a series of physical or digital artworks (paintings, sculptures, graphic design, etc.) that visually interpret complex geopolitical concepts like "soft power," "resource nationalism," or the "security dilemma". The final presentation could be a virtual art with accompanying explanations of the geopolitical themes.

2."**Policy Through Craft" Project:** Explore how crafts and art can serve a diplomatic or political purpose. The project could involve researching the cultural significance of a particular craft from a conflict-affected region and using it to foster a dialogue about peace and cultural connection.

3.**Podcast Series: "Geopolitics: An Unfolding Story":** Produce a series of podcast episodes where you interview experts, analyse current events (like the US-China relationship or regional power shifts), and discuss future trends. This can explore topics in an engaging, narrative format, moving beyond the standard research.

4.**Comparative Analysis Through Case Studies: Conduct a detailed comparative analysis of two different case studies on a shared geopolitical challenge, such as the effectiveness of sanctions on Iran versus Russia.etc.**

These ideas encourage engagement with current global issues through a variety of creative and analytical lenses.

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BOOK REVIEW

Objective

The objective of this assignment is to help you understand the themes, arguments, and perspectives presented in political science and develop your ability to critically analyze and review them. By engaging with these texts, you will deepen your understanding of political ideas and history, and learn how to express your views clearly and effectively

Assigned Books:

1. **Dear Ijeawele or a Feminist Manifesto in Fifteen Suggestions- Chimamanda Ngozi Adichie –** Ishana Fatima
2. **1984 – George Orwell -** Thanisha Thangamma
3. **Jhoothan – Om Prakash Valmiki –** Satyam Kumar
4. **Animal Farm – George Orwell –** Aarav Deo Bhanj Singh Rawat
5. **Train to Pakistan – Khushwant Singh –** Yuvan Vimal Kumar
6. **The Communist Manifesto – Friedrich Engels and Karl Marx –** Saee Rutuja Wakankar

General Instructions

1. Your book review should be handwritten and should be between 1500 -2000 words approximately.

2. It should cover the following sub-topics:

   - **Introduction:**
     - Provide the name of the book, the author's name, and the publication date.
     - Briefly introduce the book's main theme and why it is important for understanding Political Science.
     - Mention whether the book is fiction or non-fiction.

   - **Summary of the Book:**
     - Provide a brief overview of the book's content and main arguments.
     - Summarize the key ideas discussed in the book. Focus on how the author presents the subject, the historical context, and major political issues discussed.

   - **Critical Analysis:**
     - Evaluate the book's arguments. Do you agree with the author's perspective? Why or why not?

     - Consider the book's relevance in the context of contemporary politics or historical events.

- Discuss the writing style of the author. Is it easy to understand? Is the language accessible for students or is it more academic?

- **Key Themes and Messages:**
  - Identify the central themes of the book. Does it deal with democracy, justice, equality, human rights, the role of the state, political ideologies, etc.?

  - Discuss the author's perspective on the key theme and how it may challenge or support existing political views or theories.

- **Conclusion:**
  - Summarize your overall thoughts on the book.
  - Would you recommend this book to others? Why or why not?
  - How has the book influenced your understanding of political concepts?

3. The Format should be as follows:

- **Title Page:**
  Include your name, class, subject (Political Science), and the title of the book.

- **Content of the Review:**

  o Start with a brief introduction to the book.

  o Follow with the summary, analysis, and themes.

  o End with a conclusion.

- **References:**
  If you have used any other sources or references for your analysis, make sure to include them in the References section.

4. Evaluation Criteria:
- Content: How well you summarize the book and analyze its themes.

- Critical Thinking: Your ability to critically assess the author's arguments and present your perspective.

- Clarity and Organization: How clearly and logically your review is written.

- Writing Quality: Grammar, sentence structure, and overall presentation.

- Depth of Analysis: Depth of thought given to the political concepts discussed in the book and their application in real-world contexts.

PSYCHOLOGY

General Instructions:
- Prepare it in a A4 sheets,
- Include interesting statistical data if required, scientific data or information.
- Ensure the project includes cover page, index, content, pictures, bibliography, and all required sections.
- Prepare this in a file (20 pages)
- Prepare the project on any one of the topics, providing the information or data under the subheadings provided for each project topic.

1. Sleep Patterns of Teenagers
- Introduction to Teen Sleep
- Biological Changes and Circadian Rhythm
- Recommended Sleep Duration for Adolescents
- Factors Affecting Teen Sleep
- Impact of Poor Sleep on Health and Academics
- Sleep Deprivation and Mood Changes
- Role of Technology and Screen Time
- Strategies to Improve Sleep Hygiene
- Conclusion

Or

2. Social Media Usage & Stress
- Introduction to Social Media
- Patterns of Social Media Usage Among Youth
- Psychological Effects of Excessive Social Media Use
- Stress, Anxiety, and Comparison Culture
- Sleep Disturbances Due to Social Media
- Positive Uses of Social Media
- Strategies for Healthy Social Media Habits
- Conclusion / Recommendations

Or

3. Study Habits & Exam Anxiety
- Introduction to Study Habits
- Common Study Patterns Among Students
- Causes of Exam Anxiety
- Relationship Between Study Habits and Performance
- Role of Time Management
- Influence of Motivation and Self-discipline
- Psychological Symptoms of Exam Stress
- Coping Strategies for Exam Anxiety
- Effective Study Techniques
- Conclusion

ECONOMICS

General Instructions:

- Do all work on A4 sheets.
- Write answers on the ruled side only.
- Make bar diagrams & pie charts on the blank side.
- Keep diagrams neat, labelled, and colourful.
- Staple sheets in order and submit after holidays.

1. Prepare a frequency array of marks obtained by 25 students in an Economics test.
   20, 15, 20, 30, 40, 25, 30, 25, 40, 20, 35, 50, 15, 50, 25, 40, 40, 30, 50, 25, 30, 30, 15, 45, 35

2. In a city 45 families were surveyed for the number of cellphones they used. Prepare a frequency array based on their responses as recorded.
   1, 3, 2, 2, 2, 2, 1, 2, 1, 2, 2, 3, 3, 3, 3, 3, 3, 2, 3, 2, 2, 6, 1, 6, 2, 1, 5, 1, 5, 3, 3, 2, 4, 2, 7, 4, 2, 4, 3, 4, 2, 0, 3, 1, 4, 3

3. Prepare a frequency array of marks obtained by 30 students in a Class Test.
   12, 18, 20, 25, 12, 30, 28, 22, 18, 25, 30, 30, 22, 18, 35, 12, 28, 25, 22, 30, 35, 20, 22, 25, 18, 28, 35, 20, 25, 30

4. Present the data in the form of a simple bar diagram.

Year	2014	2015	2016	2017	2018
Production	100	200	400	340	550

5. Prepare a pie chart for the given data.

Status	Marginal Worker	Main Worker	Non-Worker
Population	12	36	73
Percentage	9.9%	29.8%	60.3%

6. Prepare a pie chart for the distribution of household monthly expenditure.

Category	Food	Education	Transport	Rent	Others
Amount Spent	6000	3000	2000	5000	4000

REGULAR MATHEMATICS

General Instructions :

1. This Question paper contains - **five sections** A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. **Section A** has 18 **MCQ's** and 02 Assertion-Reason based questions of 1 mark each.
3. **Section B** has 5 **Very Short Answer (VSA)-type** questions of 2 marks each.
4. **Section C** has 6 **Short Answer (SA)-type** questions of 3 marks each.
5. **Section D** has 4 **Long Answer (LA)-type** questions of 5 marks each.
6. **Section E** has 3 **source based/case based/passage based/integrated units of assessment (4 marks each)** with sub parts.

SECTION – A

1		1
	If $(x, 3y, 4) = (4, -3, 2z)$, then the value of $x + 2y + 2z$ is (a) 6 $\qquad$ (b) 1 $\qquad$ (c) -1 $\qquad$ (d) -2	
2		1
	The value of: $i^{49} + i^{50} + i^{51} + i^{52}$ where i = $\sqrt{-1}$ (a) 1 $\qquad$ (b) 0 $\qquad$ (c) i $\qquad$ (d) -i	
3		1
	The intercept form of the equation of line 7x +4y -28 = 0 is a) $\frac{x}{4} + \frac{y}{7} = 1$ $\quad$ b) $\frac{x}{-4} + \frac{y}{-7} = 1$ $\quad$ c) $\frac{x}{4} + \frac{y}{-7} = 1$ $\quad$ d) $\frac{x}{7} + \frac{y}{4} = 1$	
4		1
	If $\lim_{x \to 1} \frac{x^4 - 1}{x - 1} = \lim_{x \to k} \frac{x^3 - k^3}{x^2 - k^2}$ then k is_____ (a) $\frac{2}{3}$ $\qquad$ (b) $\frac{8}{3}$ $\qquad$ (c) $\frac{4}{3}$ $\qquad$ (d)3	
5		1
	Solve: $4x + 7 < 6x + 3$ for real values of x. (a) $x \in (2, \infty)$ $\qquad\qquad$ (b) $x \in (-\infty, 2)$ (c) $x \in (-2, \infty)$ $\qquad\qquad$ (d) $x \in (-\infty, -2)$	

6	If $\frac{1}{9!} + \frac{1}{10!} = \frac{x}{11!}$, find x. (a) 100 (b) 90 (c)110 (d)121	1
7	The coordinates of centre of a circle $x^2 + y^2 + 4x - 6y + 8 = 0$ is a) (-2,-3) b) (2,3) c) (-2,3) d) (2,-3)	1
8	Equation of the directrix of the parabola $y^2 = 16x$ is a) x = 4 b) x = -4 c) y = 4 d) y = -4	1
9	Distance of the point (4,6,-8) from x - axis is a) 10 units b) $\sqrt{116}$ units c) 4 units d) $\sqrt{52}$ units	1
10	If cot x = 4/3 and x lies in third quadrant, then find the value of sec x. (a) 5/4 (b) −4/5 (c) 3/5 (d) −5/4	1
11	The modulus of the complex number $(4+3i)^2$ is equal to (a) 5 (b) 25 (c) 7 (d) 49	1
12	Value of $\lim\limits_{x \to 2} \frac{x^2-4}{x^2+x-6}$ (a) −4/5 (b) 0 (c) 4/5 (d) 1/2	1
13	How many 4-digit numbers can be formed by using the digits 1 to 9, if repetition of digits is not allowed? (a) 3024 (b) 3026 (c) 3040 (d) 3014	1
14	.Solution of system of linear inequalities $3x - 7 < 5 + x$, $11 - 5x \leq 1$ is (a) (2,6) (b) {2,6} (c) [2,6) (d) (2,6]	1
15	In a G.P , the 3rd term is 24 and the 6th term is 192, find the 10th term. (a) 512 (b) 3072 (c) 1536 (d) 6144	1

16	Find angles between the lines $\sqrt{3}\,x + y = 1$ and $x + \sqrt{3}\,y = 1$. (a) $\frac{\pi}{6}$ (b) $\frac{\pi}{4}$ (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{3}$	1
17	Find the derivative of (sin x + cos x) at $x = \dfrac{\pi}{4}$. (a) 1 (b) -1 (c) 0 (d) $\sqrt{2}$	1
18	$\lim\limits_{x \to \pi} \dfrac{\sin x}{x - \pi}$ is equal to a) 1 b) -1 c) 2 d) -2	1
19	Assertion (A): If the number $\dfrac{-2}{7}, k, \dfrac{-7}{2}$ is in G.P then $k = \pm 1$. Reason (R): If a_1, a_2, a_3 are in G.P then $\dfrac{a_2}{a_1} = \dfrac{a_3}{a_2}$. 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.	1
20	Assertion (A): The domain of the relation R = {x + 2, x + 4 : X∈N, x < 8} is {3, 4, 5, 6, 7, 8, 9}. Reason (R): The range of the relation R = {(x + 2, x + 4: X∈N, x < 8} is {1, 2, 3, 4, 5, 6, 7}. 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.	1

SECTION – B

21	Find the derivative of $\dfrac{\sin x + x\cos x}{\sin x - \cos x}$ with respect to x.	2
22	In how many of the distinct permutations of the letters in MISSISSIPPI do the four I's come together?	2
	OR	
	How many words, with or without meaning, each of 2 vowels and 3 consonants can be formed from the letters of the word "EDUCATION"?	
23	Let $f = \{(1,1), (2,3), (0,-1), (-1,-3)\}$ be a function from Z to Z defined by $f(x) = ax + b$, for some integers a, b. Determine a, b.	2
24	Show that $\tan 5x \tan 3x \tan 2x = \tan 5x - \tan 3x - \tan 2x$	2
25	Find the coordinates of the foci, the vertices, the length of major and minor axis of the ellipse $9x^2 + 4y^2 = 36$ **(or)** Find the coordinate of the foci, the vertices, the eccentricity and the length of the latus rectum of the hyperbola $16x^2 - 9y^2 = 576$	2

SECTION – C

26	Find the derivative of f(x) = cos x using first principle.	3
27	The line through the points (h, 3) and (4, 1) intersects the line 7x – 9y – 19 = 0 at right angle, Find the value of h? **(or)** Find the image of the point (3, 8) with respect to the line x + 3y = 7 assuming the line to be a plane mirror.	3
28	If $\tan A = \dfrac{1}{2}$ and $\tan B = \dfrac{1}{3}$, the find tan(2A+B) **(or)** Find the value of $\cos 150° + \sin 300°$	3

| 29	If $x + iy = \dfrac{a+ib}{a-ib}$, prove that $x^2 + y^2 = 1$.	3
30	Insert three geometric means between $\frac{1}{3}$ *and* 432 **(or)** Find the sum of the following series up to n terms: 7 + 77 + 777 + 7777 + …	3
31	If the origin is the centroid of the triangle PQR with vertices P(2a, 2, 6), Q(-4, 3b, -10) and R(8, 14, 2c), then find the values of a, b and c.	3

SECTION D

32	Find the equation of the circle passing through the points (4, 1) and (6, 5) and whose centre is on the line $4x + y = 16$ **OR** Find the equation of the ellipse, with major axis along the x-axis and passing through the points (4, 3) and (6, 2).	5
33	The sum of two numbers is 6 times their geometric mean, show that numbers are in the ratio $(3 + 2\sqrt{2}) : (3 - 2\sqrt{2})$	5
34	A solution of 8% boric acid is to be diluted by adding a 2 % boric acid solution to it .The resulting mixture is to more than 4% but less than 6% boric acid .If we have 640 litres of the 8% solution,how many litres of the 2% solution will have to be added ? **(or)** A man wants to cut three lengths from a single piece of board of length 91cm. The second length is to be 3cm longer than the shortest and the third length is to be twice as long as the shortest. What are the possible lengths of the shortest board if the third piece is to be at least 5cm longer than the second?	5
35	Find $\sin\frac{x}{2}$, $\cos\frac{x}{2}$ *and* $\tan\frac{x}{2}$ when $\tan x = \dfrac{-4}{3}$, x is in quadrant II.	5

36		4
	A railway track connects two different cities located at points A and B respectively. Equation of this railway track is given by $2x + y - 12 = 0$. Raju starts his journey from point P(2, 3) and tries to reach the railway track in least possible time. Based on the above information, answer the following questions. (i) What is the slope of the path followed by Raju? [1] (ii) Find the equation of path followed by Raju. [1] (iii) Find the point where Raju meet railway track path and then find distance covered by him to reach the track. [2] **OR** (iii) If one more railway track with its equation $3y - x + 2 = 0$ connects the same two cities located A and B, which will be nearer for Raju? [2]	
37		4
	The binomial expansion of an expression of the form $(x + y)^n$ is given by: $$(x + y)^n = \sum_{r=1}^{n} {}^{n}_{r}C \, x^{n-r} y^r$$ Based on the above information, answer the following questions. (i) Find the value of $(101)^4$. [1] (ii) Find the expansion of $(1 + 2x)^5$. [1] (iii) Use binomial theorem to find the larger number out of $(1.1)^{10000}$ and 1000. [2] **OR** (iii) Find $(96)^3$ using binomial theorem. [2]	

38	Ashish is writing examination. He is reading question paper during reading time. He reads instructions carefully. While reading instructions, he observed that the question paper consists of 15 questions divided in to two parts - part I containing 8 questions and part II containing 7 questions.	4
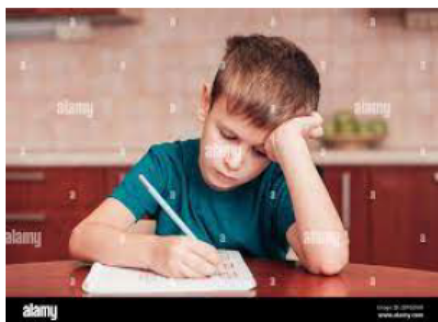
i. If Ashish is required to attempt 8 questions in all selecting at least 3 from each part, then in how many ways can he select these questions (1)

ii. If Ashish is required to attempt 8 questions in all selecting 3 from I part, then in how many ways can he select these questions (1)

iii. If Ashish is required to attempt 8 questions in all selecting 4 from part I and 4 from part II, then in how many ways can he select these questions (2)

OR

If Ashish is required to attempt 8 questions in all selecting 6 from one section and remaining from another section, then in how many ways can he select these questions (2)

SET I

01. If a circle passes through the points (0,0), (a, 0), (0, b), then the coordinates of its centre are

   a) (a, b)   b) (-a/2, -b/2)   c) (a/2, b/2)   d) (-a, -b)

02. The equation of the parabola through (-1,3) and symmetric with respect to x-axis and vertex at origin is   a) $y^2 = -9x$ b) $y^2 = 9x$ c) $y^2 = 3x$ d) $y^2 = -3x$

03. If a line joining the points (-2, 6) and (4,8) is perpendicular to the line joining the points (8,12) and (x, 24), then the value of x is

   a) 3   b) 4   c) -4   d) 2

04. The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volume is

   a) 10 : 17   b) 20 :27   c) 17 : 27   d) 20: 37.

05. The number of proper subsets of a set containing 4 elements is.....

   a) 16   b) 15   c) 8   d) 20.

06. The product of 5 terms of a G.P, whose 3rd term is 2 is

   a) 25   b) 32   c) 9   d)243.

07. If n(A—B) = 10, n(B—A) =23, n(AUB) = 50, n(A∩B) is

   a) 7   b) 17   c) 27   d) 33.

08. The product $\sqrt[3]{2}.\sqrt[4]{2}.\sqrt[12]{32}$ equals

   a)$\sqrt{2}$ b) 2   c) $\sqrt[12]{2}$ d)$\sqrt[12]{32}$.

09. The value of $2 + \log_{10}(0.01)$ is

   a) 4   b) 3   c) 1   d) 0

10. In a class of 80 students, 39 students play football and 45 students play cricket and 15 students play

   both the games. Then the number of students who play neither is

   a) 11   b) 14   c) 16   d) 18.

11. If 9 times the 9th term of an A.P is equal to 13 times the 13th term, then the 22nd term of the A.P is

   a) 0   b) 22   c) 220   d) 198.

12. In how many ways a committee consisting of 3 men and 2 women can be chosen from 7 men and 5

   women?

   a) 45   b) 350   c) 4200   d) 230.

13.$\lim_{x \to 0} \frac{\sqrt{4+x}-2}{x}$ is equal to

   a) 4   b) 1   c) $\frac{1}{4}$ d) 0

14. If f(x) = $\frac{(3x+1)(2\sqrt{x}-1)}{\sqrt{x}}$, then f '(1) is equal to

   a) 5   b) -5   c) 6   d) 11/2

15. The median of the data 78, 56, 22, 34, 45, 54, 39, 68, 54, 84 is

    a) 45   b) 49.5   c) 54   d) 56.

16. The difference between the simple and compound interest compounded annually on a certain sum

   of money for 2 years at 4% per annum is Re 1. Then the sum is

   a) Rs 625   b) Rs 630   c) Rs 640   d) Rs 650.

17. The point on the y-axis which is equidistant from the points (3, 2) and (-5, -2) is

    a) (0,2)   b) (0, -2)   c) (0,-1)   d) (0,-4)

18. The inclination of the line x + y +3 = 0 with the positive direction of x-axis is

   a) 45°   b) 60°   c) 30°   d) 135°

19. The two lines ax + by + c = 0 and a'x +b'y + c' = 0 are perpendicular if

   a) ab' = a'b   b) ab + a'b' = 0   c) ab' + a'b =0   d) aa'+bb'=0

20. If the parabola y^2 = 4ax passes through the point (3, 2), then the length of the latus rectum is

   a) 2/3   b) 4/3   c) 1/3   d) 4.

21. Find the value of 'k' so that the function $f(x) = \begin{cases} kx + 1, if \ x \leq 5 \\ 3x - 5, if \ x > 5 \end{cases}$ is continuous at x = 5.

22. Evaluate: $\lim\limits_{x \to 3} \left(\frac{x^4-81}{2x^2-5x-3} \right)$.

23. The sum of three numbers in A.P. is 24 and their product is 440. Find the numbers.

24. A bag contains twenty discs numbered 1 to 100. A disc is drawn from the bag. What is the probability that the number on it i) is a prime number ii) is a multiple of 3 ?

25. Find the amount and the compound interest on Rs 10,000 at 8% per annum for 2 years.

26. A retailer buys a TV from a manufacturer for Rs.25000. He marks the price of the TV 20% above his cost price and sells it to a consumer at 10% discount on the marked price. If the sales are intra state and rate of GST is 12%. Find

(i)The marked price of the TV.

(ii) Consumer's cost price of the TV inclusive of tax.

(iii)GST paid by the retailer to the Central and state Government.

27. Find the equation of the parabola whose focus is the point (2,3) and directrix is the line x − 4y+3 = 0

28. If $x^3+x^2y + xy^2+y^3 =2024$, then find $\frac{dy}{dx}$ when x =2, y = 1.

29. If $y = \frac{\sqrt{x^2+1}+\sqrt{x^2-1}}{\sqrt{x^2+1}-\sqrt{x^2-1}}$, find $\frac{dy}{dx}$ at x = 1.

30. Find the amount and present value of an annuity due of Rs500 per quarter for 8 years and 9 months

   at 8% compounded quarterly.

31. Evaluate: $\dfrac{(5.364)^3 \times (49.76)^{\frac{1}{2}}}{(83.45)^{\frac{1}{3}}}$.

Case study -1

32. Two friends A and B are playing a game in which they throw a pair of coins alternatively and decided who gets both heads first will win the game. If A starts the game, based on the above information, answer the following questions:

i) What is the probability that A throws two heads in a particular throw of pair of coins?

   a) ¼   b) 1/2   c) 1   d) 0   (1)

ii) What is the probability that B do not throw two heads on a particular throw of pair of coins?

   a) ¼   b) ¾   c) ½   d) 0   (1)

iii) What is the probability that A wins the game?   (2)

                    Or

   What is the probability that B wins the game?

Case study -2

33. The letters of the word "COMPUTER" are arranged in all possible ways. Based on the above information, answer the following questions:

i) The total number of words with or without meaning that can be formed is

   a) 8C₈   b) 8P₈   c) 2 x 8P₈   d) 8x 7P₇.   (1)

ii) The number of words in which vowels occupy odd places is

   a) 4P₃X5!   b) 3!x5!   c) 4C₃ x 5!   d) 4P₃x4!   (1)

iii) Find the number of words in which vowels occur together.

                                    Or   (2)

Find the number of words starting with C and end with R

Case study – 3

34. An open wooden box has the outer dimensions as length 14cm, breadth 11cm, and depth 9cm. The thickness of wood is 1cm. Based on the given information, answer the following questions:

i) The internal length of the box is
   a) 12cm   b) 11cm   c) 10cm   d) 13cm   (1)

ii) The internal depth of the box is
   a) 7cm   b) 8cm   c) 10cm   d) 9cm   (1)

iii) Find the length of the longest rod that can be fitted in the box .

                                    Or   (2)

If the wood weighs 0.5 g per cm^3, find the weight of the box in Kg.

35. Show that the points (7,1), (-2,4), (5,5) and (6,4) are concyclic. Also find the equation, centre and

   radius of the circle on which they lie.

36.In financial year2019 – 20 , the gross salary of sanjay (age 29 years)was Rs. 8,50,000.He deposited Rs. 9200 per month in GPF , and paid Rs. 43000 as LIC premium. He donated Rs. 25000 Prime Minister's Relief fund. He took a home loan of Rs. 24,00,000 from the State Bank of India and paid Rs. 76000 as interest on Home loan and Rs. 20,000 as principal of home loan. C alculate his income tax at the end of the financial year.

<div align="center">

Income Tax slab for FY 2019 – 20

(For individual tax payers below the age of 60 years)

</div>

Taxable income	Income tax
Up to Rs2,50,000	Nil
Rs2,50,000 to Rs 5,00,000	5% of taxable income exceeding Rs2,50,000.
Rs5,00,000 to Rs10,00,000	Rs12,500+20% of taxable income exceeding Rs5,00,000
Above Rs10,00,000	Rs1,12,500+30% of taxable income exceeding Rs10,00,000.

37. i) Find the distance between the parallel lines 15x +8y--34 = 0 and 15x + 8y + 31 = 0
    ii) Find the values of 'k', given that the distance of the point (4, 1) from the line 3x – 4y + k = 0 is 4 units. .

38. Find the standard deviation of following data:

Marks obtained	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No.of.students	2	3	5	10	4	2	1

SET II

01. If a circle passes through the points (0,0), (a, 0), (0, b), then the coordinates of its centre are

    b) (a, b)   b) (-a/2, -b/2)   c) (a/2, b/2)   d) (-a, -b)

02. The equation of the parabola through (-1,3) and symmetric with respect to x-axis and vertex at origin is   a) $y^2 = -9x$ b) $y^2 = 9x$ c) $y^2 = 3x$ d) $y^2 = -3x$

03. If a line joining the points (-2, 6) and (4,8) is perpendicular to the line joining the points (8,12) and (x, 24), then the value of x is

    b) 3   b) 4   c) -4   d) 2

04. The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volume is

    b) 10 : 17   b) 20 :27   c) 17 : 27   d) 20: 37

05. The average of 100 numbers is 50. If one of the numbers which was 50 is replaced by 150, the new average will be

    a) 50.5   b) 51   c) 51.5   d) 52.

06. The product of 5 terms of a G.P, whose 3rd term is 2 is

    b) 25   b) 32   c) 9   d)243.

07. If n(A—B) = 10, n(B—A) =23, n(AUB) = 50, n(A∩B) is

    b) 7   b) 17   c) 27   d) 33.

08. The product $\sqrt[3]{2}.\sqrt[4]{2}.\sqrt[12]{32}$ equals

    a)$\sqrt{2}$ b) 2   c) $\sqrt[12]{2}$ d)$\sqrt[12]{32}$.

09. A train is running at 72km/hr crosses a pole in 6 seconds. What is the length of the train?

    a) 100m   b) 110m   c)120m   d) 130m

10. In a class of 80 students, 39 students play football and 45 students play cricket and 15 students play

    both the games. Then the number of students who play neither is

    b) 11   b) 14   c) 16   d) 18.

11. If 9 times the 9th term of an A.P is equal to 13 times the 13th term, then the 22nd term of the A.P is

    a) 0   b) 22   c) 220   d) 198.

12. In how many ways a committee consisting of 3 men and 2 women can be chosen from 7 men and 5 women?

    a) 45   b) 350   c) 4200   d) 230.

13. $\lim\limits_{x \to 0} \dfrac{\sqrt{4+x}-2}{x}$ is equal to

   a) 4   b) 1   c) $\dfrac{1}{4}$ d) 0

14. If f(x) = $\dfrac{(3x+1)(2\sqrt{x}-1)}{\sqrt{x}}$, then f '(1) is equal to

   a) 5   b) -5   c) 6   d) 11/2

15. The median of the data 78, 56, 22, 34, 45, 54, 39, 68, 54, 84 is

   a) 45   b) 49.5   c) 54   d) 56.

16. The difference between the simple and compound interest compounded annually on a certain sum of money for 2 years at 4% per annum is Re 1. Then the sum is

   a) Rs 625   b) Rs 630   c) Rs 640   d) Rs 650.

17. The point on the y-axis which is equidistant from the points (3, 2) and (-5, -2) is

   a) (0,2)   b) (0, -2)   c) (0,-1)   d) (0,-4)

18. The inclination of the line x + y +3 = 0 with the positive direction of x-axis is

   a) 45°   b) 60°   c) 30°   d) 135°

19. The two lines ax + by + c = 0 and a'x +b'y + c' = 0 are perpendicular if

   a) ab' = a'b   b) ab + a'b' = 0   c) ab' + a'b =0   d) aa'+bb'=0

20.If the parabola y^2 = 4ax passes through the point (3, 2), then the length of the latus rectum is

   a) 2/3   b) 4/3   c) 1/3   d) 4.

21. Find the value of 'k' so that the function $f(x) = \begin{cases} kx + 1, if\ x \le 5 \\ 3x - 5, if\ x > 5 \end{cases}$ is continuous at x = 5.

22. Evaluate: $\lim\limits_{x \to 3} \left(\dfrac{x^4-81}{2x^2-5x-3} \right)$.

23. The sum of three numbers in A.P. is 24 and their product is 440. Find the numbers.

24. A bag contains twenty discs numbered 1 to 100. A disc is drawn from the bag. What is the probability

   that the number on it i) is a prime number ii) is a multiple of 3 ?

25. Find the amount and the compound interest on Rs 10,000 at 8% per annum for 2 years.

26. Find the equation of the circle the end points of whose one diameter are the centres of the circles

   $x^2 + y^2 + 6x—14y+ 5 = 0$ and $x^2 + y^2 -- 4x+10y+ 7 = 0$

27. Find the equation of the parabola whose focus is the point (2,3) and directrix is the line x − 4y+3 = 0

28. If $x^3+x^2y + xy^2+y^3 =2024$, then find $\frac{dy}{dx}$ when x =2, y = 1.

29. If $y = \frac{\sqrt{x^2+1}+\sqrt{x^2-1}}{\sqrt{x^2+1}-\sqrt{x^2-1}}$, find $\frac{dy}{dx}$ at x = 1.

30. Find the mean and standard deviation for the following data:

x_i	6	10	14	18	24	28	30
f_i	2	4	7	12	8	4	3

31. A , B and C can separately do a work in 2, 6 and 3 days respectively. Working together, how much time would they require to do it? If the work earns them Rs 960, how should they divide the money?

Case study -1

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i) What is the probability that A throws two heads in a particular throw of pair of coins?

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Case study – 3

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If the wood weighs 0.5 g per cm³, find the weight of the box in Kg.

35. Show that the points (7,1), (-2,4), (5,5) and (6,4) are concyclic. Also find the equation, centre and radius of the circle on which they lie.

36. i) If $y = \sqrt{logx + \sqrt{logx + \sqrt{logx + \cdots to \infty}}}$, prove that $x(2y - 1)\frac{dy}{dx} = 1$.

   ii) if $y = \frac{log(x+\sqrt{x^2+1})}{\sqrt{x^2+1}}$, prove that $(x^2 + 1)\frac{dy}{dx} + xy = 1$.

37. i) Find the distance between the parallel lines 15x +8y--34 = 0 and 15x + 8y + 31 = 0

   ii) Find the values of 'k', given that the distance of the point (4, 1) from the line 3x – 4y + k = 0 is 4 units.

38. Find the amount and present value of an annuity due of Rs500 per quarter for 8 years and 9 months at 8% compounded quarterly.

PHYSICS (11 B)

1. Students are required to design and develop a working model based on any concept from the Class 11 or Class 12 Physics curriculum.

CHEMISTRY (11 B)

1.To prepare for the annual practical exam, complete the record and also to study the salt analysis procedure.

BIOLOGY (11 B)

1. To prepare for the annual practical exam, complete the record
2. Investigatory project

BUSINESS STUDIES

- **THIS TASK IS PART OF THE PROJECT WORK.**
- **TO BE FURNISHED IN A SEPARATE PROJECT FILE.**
- **Students are required to select ANY TWO OF THE FOLLOWING TOPICS and prepare comprehensive projects incorporating thorough analysis and creative presentation.**

TOPICS

1. **Environmentally Sustainable Business Models**
   (Green manufacturing, recycling-based businesses)

2. **How Businesses Can Reduce Carbon Footprints**
   (Case study on manufacturing or service firms)

3. **Business Ethics in the Digital Age**
   (Data privacy, phishing, online fraud prevention)

Fine Arts Assignment for class XI

Subject: Still Life and Nature

Medium: Pencil/Charcoal/Pen on A4 size paper

Please take the print outs of any selected five still life and three nature drawings from the following references and draw.

Vương Thảo