

VAISH MODEL SR. SEC. SCHOOL, BHIWANI

Summer Vacation Home Assignment

Session : 2024-25

Class : XII

English

1. Attempt unsolved passages from BBC compacta (First Three)
2. Attempt four unsolved notices from BBC compacta.
3. Attempt following notes in 150 words each.
 - (i) Linguistic chauvinism as presented in 'The Last Lesson'.
 - (ii) Life in Seemapuri. (Lost Spring)
 - (iii) Life in Firozabad. (Lost spring)
 - (iv) Charactersketch of William Douglas (Deep water)
 - (v) Importance of optimism and perseverance (Deep water)
 - (vi) The theme of war fear, stress in modern life. (The Third Level)

Hindi

1. आरोह भाग-2 : पाठ-11 भक्तिन
पाठ-12: बाजार दर्शन
पाठ-01: आत्मपरिचय, दिन जल्दी-जल्दी ढलता है।
पाठ-02: पतंग
2. वितान भाग-2 : पाठ-1 सिल्वर वैडिंग
पाठ पढ़िए, समझिए व अभ्यास प्रश्नोत्तर लिखिए। सरस्वती हिन्दी व्याकरण की पुस्तक से 'विभिन्न माध्यमों के लिए लेखन' विषय पर एक परियोजना कार्य तैयार कीजिए।

Mathematics

1. Solve the questions provided with the homework paper in the form of worksheet in a separate notebook.
2. Solve the MCQs, Assertion-Reason, Short answer questions and case-study based questions of
 - Chapter-1 : Relations and function
 - Chapter-2 : Inverse Trigonometry
 - Chapter-3 : Mathices
 - Chapter-5 : Mathices (continued) from 'elements of Maths'.
3. Make a colourful chart or model on any topic.

Music

1. निम्नलिखित परिभाषाओं को अपनी प्रैक्टिकल फाईल में लिखिए व याद कीजिए।
अलंकार, कण, मींड, खटका
2. राग भैरव का शास्त्रीय परिचय तथा द्रुत ख्याल की स्वरलिपि लिखिए व याद कीजिए।
3. ताल रूपक शास्त्रीय परिचय, ताल नोटेशन ठाह (एकगुन), दुगुन, तिगुन तथा चौगुन लयकारी सहित लिखिए व याद कीजिए।
4. उस्ताद बड़े गुलाम अली खाँ का सचित्र जीवन परिचय अपनी प्रैक्टिकल फाईल में लिखिए व याद कीजिए।

Painting

1. Make two creative sheet on A2 size. (creative composition)
2. Make any one drawing on A2 size sheet (pen & ink drawing or pencil shading)

Computer Science

- 1) Revise complete syllabus covered so far.
- 2) Do solve Five practical based question from chapter 1 and 2.
 - Error finding
 - Output Based
 - Random Numbers
- 3) Prepare project synopsis/guidelines for the final practical exams.
- 4) Write down all the full forms that are used in networking unit.
- 5) Write down the different data types available in of Python.

Physics

1. Complete Note Book.
2. Complete Practical Note Book.
3. Revise & write following derivation in fair notebook.
 - (i) Electric field due to Dipole at axial and equatorial point
 - (ii) Gauss law with Application.
 - (iii) Equipotential Surface with properties
 - (iv) Capacitance of parallel plate capacitor with dielectric slab in it.

Chemistry

1. Learn and revise upto the syllabus completed in classes.
2. Complete your Class Note Book and Practical Record File.
3. Learn all the tests of Acidic and Basic Radical of salt Analysis.

Biology

1. Complete your practical Note Book.
2. Learn chapter 1 and 2.
3. Draw diagram of following.
 - (i) T.S of Anther, Anatropus ovule, Embryo-sac, Male & female Reproductive system.
 - (ii) Write & Learn dark inked definition.

Geography

1. Prepare a project Report on statistics on the topic of mean, Median, Mode, S.D, Range Q.D., S.D. in simple methods.

Part – I

2. Learn : Lesson – 3 : Human development मानव विकास
Lesson – 4 : Primary Activities प्राथमिक क्रियाएँ

3. Part – II

Lesson – 3 : Land Resources and Agriculture भू-संसाधन और कृषि

History

History : Learn the following lesson :

1. Lesson-1 : The Harappan civilization (हड़प्पा सभ्यता)
2. Lesson-2 : Kings, Farmers and Towns (राजा, किसान और नगर)
3. Lesson-3 : Kingship, caste and class (बंधुत्व, जाति तथा वर्ग)
4. Lesson-4 : Thinkers, Beliefs and Buildings (विचारक, विश्वास और इमारतें)

Political Science

1. Contemporary World Politics : (समकालीन विश्व में राजनीति)
Chapter : The end of Bipolarity (दो ध्रुवीयता का अंत)
Chapter : new Centres of Power (सत्ता के वैकल्पिक केन्द्र)
2. Politics in India Since Independence : (स्वतंत्र भारत में राजनीति)
Chapter : Challenge of Nation-Building (राष्ट्र निर्माण की चुनौतियाँ)
Revise all these chapters
3. Revise and Practise Europe, Asia and India's map.
यूरोप, एशिया तथा भारत के मानचित्र को दोहराए तथा अभ्यास कीजिए।
4. Prepare a scrapbook on National and International Political News.
राष्ट्रीय तथा अंतर्राष्ट्रीय राजनीतिक समाचारों पर स्कैप बूक तैयार कीजिए।

Economics

Do all the NCERT question and numerical questions from lesson 1, 2, 3 and 5 in Macro Economics in a separate notebook.

Accountancy

1. Solve all the practical and additional questions given in your book for the following lesson.
Lesson – 1 : Fundamentals of Partnership Accounting
Lesson – 3 : Admission of a Partner
2. Prepare a project file taking a comprehensive problem – Prepare journal entries, Ledger, Trial Balance and Financial statements.

Business Studies

1. Learn and Revise : MCQ, Assertion-Reason questions, NCERT Book questions and case-study questions given in the last of following lessons in your book.
Lesson 1 : Nature and importance of management
Lesson 2 : Principles of management
Lesson 3 : Business Environment
Lesson 4 : Planning
2. Also prepare a chart OR wall hanging on any one topic of the following
 - Henry Fayol's Principles
 - Scientific Principles & Techniques
 - Environmental Dimensions

CHAPTER TEST 1

Time Allowed : 1 Hour

Max. Marks : 30

The following questions (1-5) are Multiple Choice Questions.

Choose the most appropriate answer:

1. The relation R in the set {1, 2, 3} given by: $R = \{(1, 2), (2, 1), (1, 1)\}$ is :
 - (a) symmetric and transitive but not reflexive
 - (b) reflexive, symmetric but not transitive
 - (c) symmetric, but neither reflexive nor transitive
 - (d) an equivalence relation. 1
2. If $f(x) = |x|$ and $g(x) = [x]$, then $gof(3.7)$ is equal to:
 - (a) -3.7
 - (b) 3
 - (c) 3.7
 - (d) 4. 1
3. If $f(x) = \log(1+x)$ and $g(x) = e^x$, then the value of $gof(x)$ is:
 - (a) e^{1+x}
 - (b) $1+x$
 - (c) $\log x$
 - (d) e^x . 1
4. The domain of the function $f(x) = \frac{1}{\sqrt{|x|-x}}$ is :
 - (a) $(-\infty, \infty)$
 - (b) $(0, \infty)$
 - (c) $(-\infty, 0)$
 - (d) $(-\infty, \infty) \setminus \{0\}$. 1
5. The function : $\mathbb{R} \rightarrow \left[-\frac{1}{2}, \frac{1}{2}\right]$ defined as $f(x) = \frac{x}{1-x^2}$ is:
 - (a) surjective but not injective
 - (b) neither injective nor surjective
 - (c) invertible
 - (d) injective but not surjective. 1

The following questions (6-8) are Assertion-Reason Type Questions.

- (a) Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- (b) Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- (c) Assertion (A) is correct, Reason (R) is false statement.
- (d) Assertion (A) is false, but Reason (R) is correct statement.
6. **Assertion (A):** If $f(x) = \ln(x^2)$ and $g(x) = 2 \ln(x)$, then $f(x) = g(x)$.
Reason (R): For $x < 0$, $g(x)$ is not defined. 1
7. **Assertion (A):** If $f(x)$ is an odd function and $g(x)$ is an even function, then $f(x) + g(x)$ is neither even nor odd. 1
Reason (R): Odd function is symmetrical in opposite quadrants and even is symmetrical about y-axis.
8. **Assertion (A):** A function $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = x - [x]$, what $[x]$ is the greater integer $\leq x$ for all $x \in \mathbb{R}$, f is not invertible.
Reason (R): $f(x)$ is periodic function 1
9. How many reflexive relations are possible in a set A whose $n(A) = 3$? 2
10. Show that the function:
 $f: \mathbb{N} \rightarrow \mathbb{N}$
 given by $f(1) = f(2) = 1$ and $f(x) = x - 1$, for every $x > 2$ is onto but not one-one. 2
11. Check if the relation R on the set $A = \{1, 2, 3, 4, 5, 6\}$ defined as $R = \{(x, y) : y \text{ is divisible by } x\}$:
 (i) symmetric (ii) transitive. 3
12. Prove that the relation R on \mathbb{Z} , defined by :
 $R = \{(x, y) : (x - y) \text{ is divisible } 5\}$
 is an equivalence relation. 3
13. Let T be the set of all triangles in a plane with R, a relation in T given by:
 $R = \{(T_1, T_2) : T_1 \text{ is congruent to } T_2\}$
 Show that R is an equivalence relation. 3

RELATIONS AND FUNCTIONS

14. Show that $f: \mathbb{N} \rightarrow \mathbb{N}$ given by:

$$f(x) = \begin{cases} x+1, & \text{if } x \text{ is odd} \\ x-1, & \text{if } x \text{ is even} \end{cases}$$

is both one-one and onto.

Read the following passage and answer the questions, which follow:

15. An organization conducted bike race under 2 different categories-boys and girls. Totally there were 250 participants. Among all of them finally three from Category 1 and two from Category 2 were selected for the final race. Ravi forms two sets B and G with these participants for his college project. Let $B = \{b_1, b_2, b_3\}$ $G = \{g_1, g_2\}$ where B represents the set of boys selected and G the set of girls who were selected for the final race.



Ravi decides to explore these sets for various types of relations and functions

Based on the above information, answer the following:

- (I) Ravi wishes to form all the relations possible from B to G. How many such relations are possible? 1
- (II) Ravi wants to know among those relations, how many functions can be formed from B to G? 2
- (III) Let $R: B \rightarrow G$ be defined by $R = \{(b_1, g_1), (b_2, g_2), (b_3, g_1)\}$. What is R? 1
- (a) Injective (b) Surjective
- (c) Neither Surjective nor Injective (d) Surjective and Injective.

OR

Ravi wants to find the number of injective functions from B to G. How many numbers of injective functions are possible?

CHAPTER TEST 2

Time Allowed : 1 Hour

Max. Marks : 30

The following questions (1–5) are Multiple Choice Questions.
Choose the most appropriate answer:

- $\sin\left(\frac{\pi}{6} - \sin^{-1}\left(-\frac{1}{2}\right)\right)$ is equal to:

(a) $\frac{1}{2}$	(b) $\frac{1}{3}$	(c) $\frac{1}{4}$	(d) $\frac{\sqrt{3}}{2}$	1
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- $\tan^{-1}(\sqrt{3}) - \cot^{-1}(-\sqrt{3})$ is equal to:

(a) π	(b) $-\frac{\pi}{2}$	(c) 0	(d) $2\sqrt{3}$	1
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- $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ is equal to:

(a) $\frac{7\pi}{6}$	(b) $\frac{5\pi}{6}$	(c) $\frac{\pi}{3}$	(d) $\frac{\pi}{6}$	1
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- If $\sin^{-1}x + \sin^{-1}y + \sin^{-1}z = \frac{3\pi}{2}$, then $x^{100} + y^{100} + z^{100} - \frac{9}{x^{101} + y^{101} + z^{101}}$ is:

(a) 1	(b) 2	(c) 0	(d) 3	1
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- A.M. of the non-zero solution of the equation: $\tan^{-1}\frac{1}{2x+1} + \tan^{-1}\frac{1}{4x+1} = \tan^{-1}\frac{2}{x^2}$ is:

(a) $\frac{2}{3}$	(b) $\frac{5}{3}$	(c) $\frac{7}{6}$	(d) $\frac{11}{3}$	1
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The following questions (6–8) are Assertion Reason Type Questions.

- Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
 - Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
 - Assertion (A) is correct, Reason (R) is wrong statement.
 - Assertion (A) is wrong, but Reason (R) is correct statement.
- Assertion (A):** If $\sin^{-1}x + \sin^{-1}y = \frac{2\pi}{3}$, then $\cos^{-1}x + \cos^{-1}y = \frac{\pi}{3}$
Reason (R): $\cos^{-1}x = \frac{\pi}{2} - \sin^{-1}x$

	1
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 - Assertion (A):** If $x + \frac{1}{x} = 2$, then principal value of $\sin^{-1}x$ is π .
Reason (R): Principal value of $\sin^{-1}x$ is $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$.

	1
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 - Assertion (A):** If $\sin^{-1}(\sin 3) = 3$.
Reason (R): Principal value of $\sin^{-1}(\sin x) = x$.

	1
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 - Find the principal value of $\cos^{-1}\left(\cos\frac{2\pi}{3}\right) + \sin^{-1}\left(\sin\frac{2\pi}{3}\right)$.

	2
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10. Prove that $3\sin^{-1}x = \sin^{-1}(3x - 4x^3)$; $x \in \left[-\frac{1}{2}, \frac{1}{2}\right]$.

11. Find the principal value of $\tan^{-1}(\sqrt{3}) - \sec^{-1}(-2)$.

12. Prove that $2\sin^{-1}\frac{3}{5} = \tan^{-1}\frac{24}{7}$.

13. Prove that $\tan\left(\frac{1}{2}\sin^{-1}\frac{3}{4}\right) = \frac{4 - \sqrt{7}}{3}$.

14. Evaluate $\tan^{-1}\left(2\cos\left(2\sin^{-1}\left(\frac{1}{2}\right)\right)\right)$.

When $x < 0$

$$-\frac{\pi}{2} \leq \sin^{-1}x < 0$$

$$\frac{\pi}{2} < \cos^{-1}x \leq \pi$$

$$-\frac{\pi}{2} < \tan^{-1}x < 0$$

$$\frac{\pi}{2} < \cot^{-1}x < \pi$$

$$\frac{\pi}{2} < \sec^{-1}x \leq \pi$$

$$-\frac{\pi}{2} \leq \operatorname{cosec}^{-1}x < 0$$

When $x > 0$

$$0 \leq \sin^{-1}x \leq \frac{\pi}{2}$$

$$0 \leq \cos^{-1}x \leq \frac{\pi}{2}$$

$$0 \leq \tan^{-1}x < \frac{\pi}{2}$$

$$0 < \cot^{-1}x \leq \frac{\pi}{2}$$

$$0 \leq \sec^{-1}x < \frac{\pi}{2}$$

$$0 < \operatorname{cosec}^{-1}x \leq \frac{\pi}{2}$$

Based on the above information, answer the following:

15. I. Find the principal value of $\sin^{-1}(\sin 5) - \cos^{-1}(\cos 5)$.

II. Find the principal value of $\sin^{-1}\left(\sin \frac{4\pi}{3}\right) + \cos^{-1}\left(\cos \frac{4\pi}{3}\right)$.

III. Find the number of solutions of the equation: $\sin^{-1}\left(\frac{2x}{x^2+1}\right) + \cos^{-1}\left(\frac{x^2-1}{x^2+1}\right) + \tan^{-1}\left(\frac{2x}{x^2-0}\right) = \frac{2x}{3}$.

OR

For $x \in \left(\frac{\pi}{2}, \pi\right)$, find the value of $\sin^{-1}[\cos(\sin^{-1}(\sin x) + \cos^{-1}(\cos x))]$.