

CLASS IX – MATHEMATICS

SAMPLE QUESTION PAPER -3

Time Allowed: 2½ Hours

Maximum Marks: 80

GENERAL INSTRUCTIONS

1. The question paper is divided into Section A and Section B.
2. Section A is compulsory.
3. In Section B, attempt any FOUR questions.
4. All working must be clearly shown.
5. Calculators are not permitted.
6. Give exact answers wherever possible.

SECTION A – 40 MARKS

Question 1

Choose the correct answer. [15 × 1 = 15]

- (i) If $x = \sqrt{3} + \sqrt{2}$, then the value of $x + 1/x$ is: (a) $2\sqrt{3}$ (b) $2\sqrt{2}$ (c) $\sqrt{6}$ (d) 5
- (ii) The value of $(\sqrt{7} + \sqrt{5})(\sqrt{7} - \sqrt{5})$ is: (a) 2 (b) 12 (c) $\sqrt{2}$ (d) 24
- (iii) If $a = 2 + \sqrt{3}$, then $1/a$ is: (a) $2 - \sqrt{3}$ (b) $\sqrt{3} - 2$ (c) $2 + \sqrt{3}$ (d) $1 + \sqrt{3}$
- (iv) A sum becomes ₹13,310 in 2 years at compound interest. If the rate is 10% p.a., the principal is: (a) ₹10,000 (b) ₹11,000 (c) ₹12,100 (d) ₹12,000
- (v) If an amount is increased by 20% and then decreased by 20%, the net change is: (a) 0% (b) 4% increase (c) 4% decrease (d) 8% decrease
- (vi) If $(x + 2)^2 - (x - 2)^2 = kx$, then k equals: (a) 4 (b) 8 (c) 16 (d) 2
- (vii) If $x + 1/x = 4$, then $x^2 + 1/x^2$ equals: (a) 12 (b) 14 (c) 16 (d) 18
- (viii) The completely factorised form of $x^4 - 5x^2 + 4$ is: (a) $(x-1)(x+1)(x-2)(x+2)$ (b) $(x^2-1)(x^2-4)$ (c) both (a) and (b) (d) neither
- (ix) If $2^{x+1} = 8^{x-1}$, then x is: (a) 1 (b) 2 (c) 3 (d) 4
- (x) If $\log x = 2$ and $\log y = 3$, then $\log(xy)$ is: (a) 5 (b) 6 (c) 1 (d) 10
- (xi) If $\log_a 27 = 3$, then $\log_a(1/9)$ is: (a) -2 (b) -3 (c) 2 (d) 3
- (xii) The value of $\sin 30^\circ \cdot \cos 60^\circ + \cos 30^\circ \cdot \sin 60^\circ$ is: (a) $1/2$ (b) $\sqrt{3}/2$ (c) 1 (d) 2
- (xiii) If $\tan \theta = 1$ and θ is an acute standard angle, then $\sin \theta + \cos \theta$ equals: (a) 1 (b) $\sqrt{2}$ (c) $1/\sqrt{2}$ (d) 2
- (xiv) The point $P(-5,0)$ lies: (a) in II quadrant (b) in III quadrant (c) on negative x-axis (d) on negative y-axis

- (xv) A point has equal positive coordinates and lies 5 units from the origin. Its coordinates are: (a) (5,5) (b) $(\sqrt{5}, \sqrt{5})$ (c) $(5/\sqrt{2}, 5/\sqrt{2})$ (d) (2.5,2.5)

Question 2

Answer the following. [4 + 4 + 4 = 12]

- (a) [4] Simplify completely: $\sqrt{7 + 4\sqrt{3}}$.
(b) [4] If $x + 1/x = 3$, find $x^3 + 1/x^3$ without finding x .
(c) [4] A sum amounts to ₹14,520 in 2 years at 10% p.a. compound interest. Find the principal. Then find the simple interest on the same principal at the same rate for 2 years.

Question 3

Answer the following. [4 + 4 + 5 = 13]

- (a) [4] Factorise completely: $x^4 - 10x^2 + 9$.
(b) [4] Simplify and express as a single power of 2: $[(2^{-3} \times 4^2)^3 \times 8^{-1}] / [16^{-2} \times 2^5]$.
(c) [5] If $\log_{10} 2 = 0.3010$ and $\log_{10} 3 = 0.4771$, find $\log_{10} 72$ without using a calculator.

SECTION B – 40 MARKS

Attempt any FOUR questions.

Question 4

- (a) [3] Rationalise and simplify: $3/(\sqrt{5} - \sqrt{2}) - 2/(\sqrt{5} + \sqrt{2})$.
(b) [3] If $x = \sqrt{2} + 1$, find $x^2 - 2x$.
(c) [4] Without finding x , determine $x^4 + 1/x^4$ when $x + 1/x = 3$.

Question 5

- (a) [3] A sum of ₹20,000 is invested at 10% p.a. compound interest. Find the difference between the compound interest and simple interest for 2 years.
(b) [3] The value of a machine depreciates by 10% each year. If its present value is ₹72,900, find its value 2 years ago.
(c) [4] A population increases by 20% in one year and by 25% in the next year. If the final population is 45,000, find the original population.

Question 6

- (a) [3] Expand and simplify: $(2x - 3y + z)^2$.
(b) [3] Factorise: $9a^2 - 24ab + 16b^2 - 49c^2$.

- (c) [4] Factorise completely: $x^4 - 2x^3 - 7x^2 + 8x + 12$.

Question 7

- (a) [3] Simplify: $(27/8)^{-2/3} \times (16/81)^{1/4}$.
(b) [3] Solve: $5^{2x-1} = 125^{x-2}$.
(c) [4] If $4^x + 4^{-x} = 17/4$, find $2^x + 2^{-x}$.

Question 8

- (a) [3] Simplify using logarithm laws: $\log(45) + \log(28) - \log(7) - \log(9)$.
(b) [3] Solve: $\log(x - 1) + \log(x + 1) = \log 24$.
(c) [4] Given $\log_{10} 2 = 0.3010$ and $\log_{10} 5 = 0.6990$, find $\log_{10}(125/16)$.

Question 9

- (a) [3] Evaluate exactly: $(\sin 60^\circ)/(\cos 30^\circ) + (\cos 60^\circ)/(\sin 30^\circ)$.
(b) [3] If θ is an acute standard angle and $\sin \theta = \cos 30^\circ$, find θ and $\tan \theta$.
(c) [4] Evaluate without a calculator: $[\tan 60^\circ \times \sin 30^\circ] + [\cos 60^\circ / \cos 60^\circ] - [\sin 45^\circ / \cos 45^\circ]$.

Question 10

- (a) [3] Points A(-3,4), B(5,4), C(5,-2) are three vertices of a rectangle. Find the fourth vertex and its perimeter.
(b) [3] A point P lies on the x-axis and is equidistant from A(2,3) and B(-4,5). Find the coordinates of P.
(c) [4] The points A(-2,1), B(4,1), C(4,-3) and D(-2,-3) are joined in order. Determine the type of quadrilateral formed and calculate its area and perimeter.

— END OF QUESTION PAPER —

HISTORY & CIVICS QUESTION PAPER
CLASS IX - HALF-YEARLY EXAMINATION

Time Allowed: 2 Hours

Maximum Marks: 80

Instructions to Candidates:

Answers to this Paper must be written on the answer sheet provided separately.
You must NOT start writing during reading time.
The time given at the head of the paper is the time allowed for writing the answers.
Attempt all questions from Part I and Part II.
The intended marks for questions or parts of questions are given in brackets [].

PART I

Q1. Choose the correct answer:

(10 × 1 = 10 Marks)

1. The Constitution of India was framed by the:

- a) Parliament of India
- b) Constituent Assembly
- c) Supreme Court
- d) Election Commission

2. The power to conduct elections to Parliament and State Legislatures is vested in the:

- a) Union Public Service Commission
- b) Election Commission of India
- c) Finance Commission
- d) Supreme Court

3. Which of the following was an important crop cultivated by the Harappans?

- a) Tea
- b) Wheat
- c) Coffee
- d) Tobacco

4. The Rigveda mainly consists of:

- a) Laws and legal codes
- b) Hymns dedicated to various deities
- c) Medical treatises
- d) Historical biographies

5. Mahavira attained Kaivalya at:

- a) Bodh Gaya
- b) Pavapuri
- c) Jambhikagrama
- d) Sarnath

6. The Buddhist council held during the reign of Ashoka was the:

- a) First Buddhist Council
- b) Second Buddhist Council
- c) Third Buddhist Council
- d) Fourth Buddhist Council

7. Megasthenes was the ambassador of:

- a) Seleucus Nicator
- b) Alexander
- c) Darius
- d) Antiochus

8. The Kalinga War was fought by Ashoka in approximately:

- a) 326 B.C.
- b) 261 B.C.
- c) 185 B.C.
- d) 78 B.C.

9. The Sangam Age is particularly associated with the ancient kingdoms of:

- a) Cholas, Cheras and Pandyas
- b) Mauryas, Guptas and Kushanas
- c) Palas, Pratiharas and Rashtrakutas
- d) Satavahanas, Vakatakas and Pallavas

10. The Gupta ruler who is known as Vikramaditya was:

- a) Chandragupta I
- b) Samudragupta
- c) Chandragupta II
- d) Skandagupta

Q2. Short Answer Type Questions

(10 × 2 = 20 Marks)

- a. Mention any two purposes served by a Constitution.
- b. What is meant by a Constituency?
- c. State any two qualifications required for a person to become a member of a State Legislature.
- d. What is meant by Secret Ballot? Why is it important?
- e. Mention any two types of houses found in Harappan settlements.
- f. What was the importance of cattle in Early Vedic society?
- g. What is meant by Ahimsa in Jainism?
- h. State any two reasons for the decline of the Mauryan Empire.
- i. Name any two important sources for the study of the Sangam Age.
- j. Mention any two achievements of Samudragupta.

PART II

SECTION A - CIVICS

Q3. Answer the following:

(10 Marks)

- i. What is meant by the Preamble of the Indian Constitution? Mention any one ideal expressed in it. (2)
- ii. Give two reasons why the Constitution is called the supreme law of the land. (2)
- iii. Explain any three safeguards provided by the Constitution for the protection of Fundamental Rights. (3)
- iv. Explain the importance of the Directive Principles of State Policy in the governance of India. Give two examples of areas in which they guide the State. (3)

Q4. Answer the following:

(10 Marks)

- i. What is meant by electoral roll? Why is it important? (2)
- ii. Mention any two conditions necessary for a free and fair election. (2)
- iii. Explain the composition and any two important functions of the State Legislative Assembly. (3)

iv. Distinguish between the Legislative Assembly and Legislative Council on the basis of composition and tenure. (3)

SECTION B - HISTORY

Q5. Answer the following:

(10 Marks)

i. What was the significance of the Great Granary in understanding Harappan society? (2)

ii. Mention any two important changes in the position of the king during the Later Vedic Period. (2)

iii. Explain any three features of the religious life of the Early Vedic people. (3)

iv. Describe any three factors that indicate that the Harappans maintained contacts with distant regions. (3)

Q6. Picture-Based Question

(10 Marks)

Study the picture given below and answer the following questions:

[Picture of a Buddhist Stupa, showing the dome, harmika and torana]

i. Identify the monument shown in the picture. (2)

ii. To which religious tradition is this monument associated? (2)

iii. Mention any three important architectural features of a Buddhist stupa. (3)

iv. Explain the importance of stupas in the spread and development of Buddhism. (3)

Q7. Answer the following:

(10 Marks)

i. Name the author of the Arthashastra and the Greek ambassador who wrote an account of Mauryan India. (2)

ii. Why is the Kalinga War considered a turning point in Ashoka's life? (2)

iii. Explain any three important features of the Sangam Age political and social life. (3)

iv. Discuss any three reasons for the success and prosperity of the Gupta Empire. (3)

Sample Paper

Class 9 A

Set B

Subject Commercial Applications

MM 100

Time allowed: Two hours

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

Attempt all questions from Section A and any four questions from Section B.

The intended marks for questions or parts of questions are given in brackets[].

1.. Statement 1: The proprietor is personally liable for all the debts of the firm. Statement II: The life of sole proprietorship is uncertain.

(a) Only I is correct

(b.) Both I and II are correct

(c) Only II is correct.

(d) Both I and II are wrong

(Analysis)

2.. In a joint Hindu family business, the karta passes away unexpectedly. However, the business operations continue without interruption as the eldest son takes over the role of karta. Which feature of joint Hindu family business does this demonstrate?

(a) Perpetual succession

(Competency Focused) (Application)

(b) Hasty decisions

(c) Limited liability

(d) Ease of formation

3.Statement 1: All the male members of a Joint Hindu family business are known as coparceners.

. Statement II: The oldest member is known as Karta.

(a) Only I is correct

(b) Both I and II are correct

(Understanding)

(c) Only II is correct

(d) Both I and II are wrong

4. The disadvantages suffered by Joint Hindu Family business are:

(a) Hasty Decisions

(b) Unlimited Liability

- (c) Limited Capital
- (d) All of these

(Recall)

5. Statement I: Expenses of management are high in Joint Hindu Family Business.

Statement II: The Karta alone is authorised to take all important decisions of the family business.

(Analysis)

- (a) Both I and II are correct
- (b) Only I is correct
- © Both I and II are wrong
- (d) Only II is correct

6. How profit is distributed in Joint Hindu Family Business?

(Recall)

- (a) Men have more share than women
- (b) The older members of family receives more profit than younger members
- (c) Equal shares for all of them
- (d) Only the Karta has all the profit

7. Statement I: The secrets of business are known to the Karta only.

Statement II: The Karta is the head of the family.

(Understanding)

- (a) Both I and II are correct
- (b) Only I is correct
- (c) Only II is correct

(d) Both I and II are wrong

8. Statement I: The existence of a joint Hindu family any member or the Karta. business is not threatened by the death or incapacity of

Statement II: The Joint Hindu family comes to an end only after the total breakdown of the Joint family.

(a) Both I and II are wrong

(Analysis)

(b) Only I is correct

(c) Both I and II are correct

(d) Only II is correct

9. Which of the following options regarding Proprietorship is wrong?

(a) Basis of formation: No agreement

(b) Management: By the Sole Proprietor

(c) Number of members: No maximum limit

(Analysis)

(d) Application of Law: The Contract Act

10. Which of the following options regarding Joint Hindu Business Family is wrong?

(a) Basis of formation: By Birth

(b) Division of profit: Unequal share

(c) Management: Only by Karta

(d) Application of law : Hindu Succession Act

11. Statement 1: The capital of joint Hindu family business is limited to the ancestral property.
Statement II: The Karta of a joint Hindu family business may not be competent to manage the business.

(a) Both I and II are correct

(b) Both I and II are wrong

(c) Only I is correct

(d) Only II is correct

12. Statement 1: A partnership is a voluntary association of two or more persons who agree to carry on some business jointly and share its profits and losses.

Statement II: The persons who enter into partnership are individually called 'partners' and collectively called 'firm'

(a) Only I is correct

(b) Only II is correct

(Analysis)

(c) Both I and II are correct

(d) Both I and II are wrong

13. An unregistered partnership firm cannot enforce its claims against a third party in a court of law.

(a) True

(b) False

(Competency Focused) (Understanding)

14. Which of the following is not a feature of partnership?

(a) Partnership is based on mutual trust and confidence.

(Recall)

b) Partnership business can be carried on by all the partners or by any of them acting on behalf of others.

(c) Partners can transfer his share in the partnership without the prior consent of all other partners.

(d) A partnership firm has no separate legal existence independent of the partners.

15. Which of the following statement is incorrect?

(Understanding)

(a) Each partner is liable to an unlimited extent for the firm's obligations towards outsiders.

(b) A partnership can be formed only for the purpose of carrying on a business.

(c) Each partner is liable for acts performed by other partners on behalf of the firm.

(d) An association of persons who jointly own a house without carrying on a business can be considered as partnership.

16. Which of the following statements regarding partnership is incorrect?

(Understanding)

(a) Secrets are known to partners.

(b) Coordination between partners is not required

(c) Ownership is shared by partners.

(d) Agreement is essential.

(Recall)

17. Which of the following is NOT the merit of partnership?

(a) Ease of formation

(b) Scope for expansion

(c) Uncertain life

(d) Combined abilities and judgement

18. Assertion (A): A partnership can only be formed for a lawful business.

Reasoning (R): Illegal activities like smuggling or theft can be considered as a partnership if profits are shared.

(a) Both A and R are correct .R is the correct explanation of A.

(Analysis & Application)

(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.

19. Which of the following statements regarding partnership is correct?

(Understanding)

(a) Less amount of funds are available

(b) They are difficult to form.

(c) Partnership business suffers from instability.

(d) Secrets are not known to all members.

20. Statement 1: Registration of partnership firms is compulsory under the Partnership Act 1932.

Statement II: The registration of a firm is a difficult process.

(a) Only I is correct

(b) Only II is correct

(Understanding)

(c) Both I and II are correct

(d) Both I and II are incorrect

Question 2(10)

I.Distinguish between

a.Partnership at will and particular partnership

b.Company and Partnership ii.Justify the following sentences

for or against and give a reason:

a. Communication is the vehicle through which basic management functions are carried out.

b.A temple is a non - commercial organisation.

c. Communication is more important in a commercial organisation than in a non commercial organisation.

Question 3 Answer the following questions(10)

I . State any two organisational barriers to communication state any two organisational barriers to communication.

- II. What is the implied agency in partnership?
- III. What is meant by semantic barriers in communication?
- IV. How does the principle of one member one vote in cooperative societies promote democratic decision making?
- V. State four characteristics of communication.

Section B(15×4=60)

(Answer any four questions from this section.)

4.1. Analyze the form of communication depicted in the image. Explain how office gossip or informal communication networks (grapevines) affect employee morale and productivity within an organization.

2. Identify the ethical concerns related to the behavior shown in the image.

3. Propose three strategic steps management can take to ensure professional communication boundaries and prevent the spread of misinformation in a corporate environment.

5.1. How does a Government company strike a balance between fulfilling public welfare objectives and maintaining commercial liability?

2. What is a company limited by guarantee?

3. Mention and explain any 3 social advantages of a company.

6.1. Name and explain how Human Resource Management helps to improve the quality of work life of its employees.

2. How do Joint Hindu families overcome the shortcomings of sole proprietorship?

3. When a company is not required to insert the word 'Public limited' or 'Private limited' after its name?

7.1. How would you use marketing research to launch a new product in a highly competitive market? Provide examples.

2. Explain the functions of general administration and legal department in a commercial organisation.

3. Evaluate the challenges faced by cooperative societies in maintaining financial sustainability and operational efficiency.

8. Case Based Questions

In 2018, a group of 15 small-scale vegetable farmers in a rural region came together to address escalating seed prices, high transportation fees, and exploitation by local middlemen. They formed and registered the GreenValley Farmers Cooperative Society under the local Cooperative Societies Act. Operations & Structure: Membership: Open to any local farmer willing to contribute a minimum basic share capital. Decisions are made collectively. Regardless of whether a farmer owns 2 acres or 20 acres of land, everyone holds equal decision-making authority.

The society pools funds to buy high-quality seeds and fertilizers directly from manufacturers at wholesale prices. It also purchased two tractors and a cold storage unit available for member hire at minimal rate.

Revenue Model: The cooperative collects, grades, and directly markets the vegetables to urban retail chains, removing middle management. At the end of the fiscal year, any accumulated surplus profit is distributed to the members as a dividend relative to their transaction volume or saved for community emergency reserves. Emerging Challenges: Recently, the society has struggled with a shortage of capital to expand its cold storage facility. Additionally, a few wealthy founding members have tried to dominate managing committee decisions, leading to passive participation and frustration among younger, smaller-scale farmers

1. Evaluate the challenges faced by cooperative societies in maintaining financial sustainability and operational efficiency.

2. In the GreenValley Organic Farmers Cooperative, members recently gathered for their Annual General Meeting (AGM) to elect a managing committee. Which core principle defines how this leadership is chosen and how decisions are managed in GreenValley?

3. During a vote on whether GreenValley should take a major loan for a new processing plant, a wealthy member who owns 40% of the cooperative's shares demands 40% of the total voting power. How does the "one member, one vote" principle handle this situation?

SECTION A (40 Marks)

(Attempt all questions from this Section)

Question 1: Multiple Choice Questions [15 Marks]

Which of the following cell organelles is bounded by a single membrane?

- (a) Mitochondria
- (b) Chloroplast.
- (c) Lysosome
- (d) Nucleus

The actively dividing tissue found at the growing tips of roots and shoots is:

- (a) Lateral meristem
- (b) Intercalary meristem
- (c) Apical meristem.
- (d) Parenchyma A

collective term used for the whorl of petals in a flower is:

- (a) Calyx.
- (b) Corolla
- (c) Androecium
- (d) Gynoecium

When pollen grains are transferred from the anther of one flower to the stigma of another flower on a different plant of the same species, it is called:

- (a) Autogamy.
- (b) Geitonogamy
- (c) Xenogamy.
- (d) Cleistogamy

The vegetative cell in a pollen grain is primarily responsible for:

- (a) Fusing with the egg cell.
- (b) Fusing with the polar nuclei
- (c) Forming the pollen tube.
- (d) Nourishing the antipodal cells

Which organelle is famously responsible for synthesis of lipids and steroids within a eukaryotic cell?

- (a) Rough Endoplasmic Reticulum.
- (b) Smooth Endoplasmic Reticulum
- (c) Golgi Apparatus.
- (d) Ribosomes

Dead, elongated cells with highly lignified walls providing mechanical strength to plants are:

- (a) Sclerenchyma fibers.
- (b) Collenchyma
- (c) Xylem parenchyma.
- (d) Sieve tubes

A flower lacking either stamens or carpels is functionally termed as:

- (a) Bisexual
- (b) Complete
- (c) Unisexual
- (d) Neutral

Flowers pollinated by wind (anemophilous) typically possess:

- (a) Brightly colored petals.
- (b) Sticky, heavy pollen grains
- (c) Large, feathery stigmas
- (d) Deeply seated nectaries

The product of triple fusion during double fertilization in angiosperms is the:

- (a) Zygote.
- (b) Primary Endosperm Nucleus
- (c) Embryo
- (d) Synergid

Which of the following elements of phloem tissue is living but lacks a nucleus at maturity?

- (a) Companion cell
- (b) Phloem parenchyma
- (c) Sieve tube element
- (d) Phloem fiber

The physical phenomenon by which water moves out of a cell when placed in a hypertonic solution is called:

- (a) Endosmosis
- (b) Exosmosis
- (c) Imbibition
- (d) Capillarity

The stalk that supports an individual flower is called the: (a) Pedicel (b) Petiole (c) Thalamus (d) Filament

Which of the following represents a structural feature to prevent self-pollination where anthers mature before stigmas? (a) Protogyny (b) Protandry (c) Herkogamy (d) Heterostyly

The cell wall of a plant cell is chemically composed primarily of: (a) Chitin (b) Peptidoglycan (c) Cellulose (d) Phospholipids

Question 2 [25 Marks]

(a) Assertion-Reason Type Questions [5 Marks]

Directions: Select the correct option: (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. Assertion (A): Plant cells do not burst when placed in water (hypotonic solution).

Reason (R): The rigid cellulose cell wall exerts turgor pressure resisting the osmotic expansion.

2. Assertion (A): Smooth muscle cells are considered involuntary in nature.

Reason (R): They display distinct alternative light and dark bands under a microscope.

3. Assertion (A): Cleistogamous flowers strictly undergo self-pollination.

Reason (R): These flowers remain closed permanently, preventing foreign pollen entry.

4. Assertion (A): Double fertilization is a characteristic feature unique to bryophytes.

Reason (R): It involves both syngamy and triple fusion within the embryo sac.

5. Assertion (A): Blood is classified as a fluid connective tissue. Reason (R): Its matrix is solid and lacks fibers completely. (b) Find the Odd One Out and Give a Reason [5 Marks]

Nucleolus, Ribosome, Centrosome, Mitochondria.

Squamous epithelium, Cuboidal epithelium, Columnar epithelium, Cartilage.

Stigma, Style, Ovary, Anther.

Nectar, Bright colors, Fragrance, Feathery stigma.

Synergids, Antipodals, Egg cell, Pollen grain.

(c) Match the Columns [5 Marks] Rewrite the correct pairs.

Column A

Column B

1. Ribosome

(A) Outer non-essential whorl protecting the bud

2. Companion cells

(B) Fusion of a male gamete with two polar nuclei

3. Calyx

(C) Site of protein synthesis

4. Triple Fusion

(D) Found adjacent to sieve tubes in phloem

5. Plasma membrane

(E) Semi-permeable dynamic lipid bilayer

(d) Fill in the Blanks (Paragraph Format) [5 Marks]

The functional unit of an organism is the cell, where the (1) _____ controls all metabolic activities. Groups of similar cells form tissues; for instance, (2) _____ tissue is a permanent plant tissue containing large intercellular spaces for storage. In flowers, the reproductive cycle starts when pollen settles on the (3) _____. The pollen tube penetrates down to the embryo sac via the style. Inside the sac, one male gamete fuses with the egg cell to form a diploid (4) _____, while the second male gamete forms the endosperm which serves as the nourishing tissue for the growing (5) _____.

(e) Analytical / Situation-Based Case Study [5 Marks]

Read the situational passage carefully and answer the five single-mark questions that follow:

Situation: An experimenter cuts a ring of bark (including the phloem layer but leaving the xylem intact) around the stem of a healthy potted tomato plant. The setup is left under optimal sunlight and watered adequately every day at the roots. After two weeks, a distinct swelling is observed just above the girdled/ringed zone, while the roots show signs of starvation and slow growth.

Which specific plant tissue was completely removed by stripping away the outer bark?

Why did the tissue just above the girdled ring swell up after two weeks?

Why did the roots show signs of starvation despite the plant being watered daily?

Was the upward conduction of water affected by this experiment? Give a reason.

Is this tissue classified as a simple permanent tissue or a complex permanent tissue?

SECTION B (40 Marks)

(Answer any four questions from this Section)

Question 3

(i) Name the organelle known as the "suicide bag" of the cell. [1]

(ii) State any two structural differences between Plant cells and Animal cells. [2]

(iii) Mention the specific function of: (a) Nucleolus, (b) Centrosome. [2]

(iv) Define a complex permanent tissue. Why is xylem classified as one? [2]

(v) Diagram Based: Look closely at the schematic diagram of a plant cell undergoing changes in solutions and answer:

(a) Identify the condition of a cell when its protoplasm shrinks away from the cell wall.

(b) What type of solution outside the cell triggers this phenomenon?

(c) Define the pressure exerted by the cell sap against the cell wall when it absorbs water. [3]

Question 4

(i) What is meant by a complete flower? [1]

(ii) Distinguish between Tendon and Ligament based on their functions. [2]

(iii) Name the four distinct elements that constitute a Phloem tissue. [2]

(iv) What is a placenta in a flower? Mention its primary structural role. [2]

(v) Diagram Based: Imagine a cross-section diagram of a typical anther containing pollen sacs:

(a) What haploid structures are produced inside these microsporangia/pollen sacs?

(b) Name the process by which an anther splits open at maturity to release its contents.

(c) What is the fate of these structures if they fall on a compatible stigma? [3]

Question 5

(i) State one distinct disadvantage of self-pollination. [1]

(ii) Differentiate between Dichogamy and Herkogamy. [2]

(iii) List two characteristic features of water-pollinated (hydrophilous) flowers. [2]

(iv) What are non-essential whorls in a flower? Give two examples. [2]

(v) Diagram Based: Imagine a schematic diagram showing an insect visiting a flower with long versatile anthers:

(a) Name this mode of pollination.

(b) State two evolutionary adaptations of this flower to attract its vector.

(c) Why are the pollen grains of such flowers generally sticky or spiny? [3]

Question 6

(i) What is the function of synergids during fertilization? [1]

(ii) Explain how a triploid ($3n$) primary endosperm nucleus is established. [2]

(iii) What structural transformations occur to the following parts after fertilization: (a)

Integuments, (b) Zygote? [2]

(iv) Define pollination. Why is it a necessary prerequisite for fertilization? [2]

(v) Diagram Based: Consider an explicit diagram of a mature female gametophyte (embryo sac) right before fertilization:

(a) Name the 3 cells located at the chalazal end.

(b) Identify the central structure formed by the fusion of two polar nuclei.

(c) State total number of cells and nuclei present in a standard mature embryo sac. [3]

Question 7

(i) Name the protective layer present outside the plasma membrane in a plant cell. [1] (ii)

Differentiate between Apical Meristem and Lateral Meristem based on their location and function. [2]

(iii) Define the terms: (a) Monoecious plant, (b) Dioecious plant. [2]

(iv) Describe the role played by the Golgi apparatus in packaging and secretion. [2]

(v) Diagram Based: Imagine a structural diagram of the human skin lining showing flat, tile-like closely packed cells:

(a) Identify this specific animal epithelial tissue.

(b) State its primary protective function in the human body.

(c) Where else is this specific tissue found besides the outer skin? [3]

Question 8

(i) What is the primary function of the rough endoplasmic reticulum? [1]

- (ii) State the two modifications of parenchymatous tissue found in plants, explaining their special roles. [2]
- (iii) How does Ornithophily differ from Anemophily? [2]
- (iv) Explain why a flower is considered a "highly modified reproductive shoot". [2]
- (v) Diagram Based: Review a layout of a longitudinal section of a carpel showing a pollen tube entering through the micro-opening of the ovule:
 - (a) Identify the small opening through which the pollen tube usually enters the ovule.
 - (b) Name the chemical-directed growth movement shown by the pollen tube down the style.
 - (c) How many male gametes are discharged by a single pollen tube into the embryo sac? [3]

SILVER GROVE SCHOOL

CLASS IX – COMPUTER APPLICATIONS SET – C

SAMPLE QUESTION PAPER – 2026–27

Time Allowed: 2 Hours Maximum Marks: 100

GENERAL INSTRUCTIONS

All questions are compulsory.

The paper is divided into four sections.

Answer all questions as instructed.

Write Java programs using proper syntax and meaningful variable names.

Show necessary working wherever required.

The intended marks for questions or parts of questions are given in brackets [].

SECTION A – OBJECTIVE TYPE QUESTIONS

Question 1

(a) Choose the correct option. [10 × 1 = 10]

1. Which feature of OOP allows the same operation to behave differently in different situations?

a) Encapsulation b) Inheritance c) Polymorphism d) Abstraction

2. Which of the following is an attribute of a Student object?

a) study() b) display() c) name d) calculate()

3. Which of the following is a valid Java variable declaration?

a) int 2num; b) int num_2; c) int class; d) int total-marks;

4. Which data type is used to store true or false?

a) boolean b) bit c) logical d) bool

5. What will 17 % 5 return?

a) 2 b) 3 c) 4 d) 5

6. Which Scanner method accepts a single word as a String?

a) next() b) nextLine() c) read() d) getString()

7. Which Math method returns the larger of two values?

a) Math.large() b) Math.maximum() c) Math.max() d) Math.high()

8. What is the value of Math.pow(2, 3)?

a) 5 b) 6 c) 8.0 d) 9.0

9. Which of the following is a unary operator?

a) + b) * c) ++ d) &&

10. Which statement is used to create an object?

a) class b) object c) new d) create

(b) Fill in the blanks. [5 × 1 = 5]

The process by which one class acquires properties of another class is called _____.

A real-world entity represented in a program is called an _____.

The data type used to store a single character is _____.

The operator && is known as the _____ operator.

5. The Scanner class is used to accept _____ from the user. (c) State whether the following statements are True or False. [5 × 1 = 5] A class can contain data members and methods.

Every Java identifier must begin with a digit.

The / operator performs division.

nextInt() is used to accept a floating-point value.

Math.max(12, 20) returns 20.

SECTION B – SHORT ANSWER QUESTIONS

Question 2 [10]

Define a class and an object. [2]

Explain abstraction with an example from everyday life. [2]

What is meant by inheritance in OOP? [2]

State any two advantages of Object Oriented Programming. [2]

Explain polymorphism in simple terms. [2]

Question 3 [10]

Differentiate between an attribute and a method. [2]

Give two examples of objects and state one attribute and one behaviour of each. [2]

What is meant by a user-defined data type? [2]

Why are objects important in Object Oriented Programming? [2]

Differentiate between a class and an object with a suitable example. [2]

Question 4 [10]

What are primitive data types? Give any four examples. [2]

Differentiate between int and double. [2]

What is a literal? Give two examples. [2]

What is type casting? Give one example. [2]

Identify the most appropriate data type for: Number of students in a class; Percentage obtained;

Grade of a student; Whether a student has passed. [2]

SECTION C – JAVA OPERATORS, INPUT AND MATHEMATICAL METHODS

Question 5 [10] (a) Find

the output. [3] int x = 25;

int y = 6;

System.out.println(x / y);

System.out.println(x % y);

System.out.println(x - y * 2);

(b) Find the output. [3] int a

= 7; int b = 3;

System.out.println(a < b);

System.out.println(a > b);

System.out.println(a != b);

(c) Evaluate the following. [4]

$8 + 4 * 2$

$(8 + 4) * 2$

$30 \% 7$

$10 == 10 \ \&\& \ 5 > 8$

Question 6 [10]

What are arithmetic operators? Name any five. [2]

Differentiate between relational and logical operators. [2]

Explain the difference between ++a and a++. [2]

What is operator precedence? [2]

Write the purpose of: -= and >=. [2]

SECTION D – PROGRAMMING IN JAVA

Question 7 [10]

Write a Java program to accept the side of a square and calculate and display:

Area of the square

Perimeter of the square

Diagonal of the square

Use the appropriate mathematical formulae.

Question 8 [10]

Write a Java program to accept the distance travelled by a vehicle and the time taken. Calculate and display the average speed.

Formula: $\text{Speed} = \text{Distance} / \text{Time}$

Use the Scanner class for input.

Question 9 [10]

Write a Java program to accept two numbers and display:

The larger number using Math.max()

The smaller number using Math.min()

The absolute difference between the two numbers using Math.abs().

Question 10 [10]

Write a Java program to accept the radius and height of a cylinder and calculate and display:

Curved Surface Area

Total Surface Area

Volume Use:

$\text{CSA} = 2\pi rh$

$\text{TSA} = 2\pi r(r + h)$

$\text{Volume} = \pi r^2 h$

Use an appropriate value of π .

END OF QUESTION PAPER

SET – C | CLASS IX – COMPUTER APPLICATIONS

SILVER GROVE SCHOOL
CLASS IX - SAMPLE PAPER C
(ENGLISH PAPER – 2)

Instructions: Attempt all questions from Section A and ONE question from each of Sections B, C and D.

SECTION A - 20 MARKS - COMPULSORY

Question 1: Choose the correct option [20x1=20]

(i) Who says "And do you now strew flowers in his way / That comes in triumph over Pompey's blood?"

(a) Flavius (b) Marullus (c) Cassius (d) Brutus

(ii) In Act I, Scene 2, Cassius compares Caesar to a Colossus while Romans are:

(a) petty men walking under his legs

(b) gods (c) slaves (d) lions

(iii) Why does Caesar say he fears Cassius?

(a) He has lean and hungry look, thinks too much

(b) He is too fat

(c) He is poor

(d) He loves Caesar too much

(iv) What does Brutus say about Caesar's ambition in his orchard soliloquy?

(a) It must be prevented before it grows (b) It is good (c) It is false (d) It is necessary

(v) Calpurnia's dream included all EXCEPT:

(a) Caesar's statue bleeding

(b) Romans bathing hands in blood

(c) Lioness whelping in street

(d) Caesar flying

(vi) Who says "Et tu, Brute"?

(a) Caesar (b) Brutus (c) Cassius (d) Antony

(vii) Bonku Babu's age and physical description was:

(a) 50+, tall with rosy cheeks but nervous (b) Young and strong (c) Short and fat (d) Old and blind

(viii) What was the name of Bonku Babu's friend Nupur Babu's meeting called?
(a) Adda (b) Ghost stories meeting (c) An informal gathering to tease Bonku (d) Science club

(ix) Ang's age and planet:
(a) 833 years old from Ang
(b) 100 years from Earth
(c) 50 years from Mars
(d) Immortal

(x) What power did Ang's small instrument have?
(a) Could make anyone invisible
(b) Could control minds and make Bonku confident (c) Could make gold (d) Could fly

(xi) In 'Oliver Asks for More', the workhouse board members were:
(a) Fat and healthy while boys starved
(b) Kind (c) Poor (d) Boys themselves

(xii) Who was Mr. Bumble?
(a) Parish beadle (b) Master of workhouse (c) Fagin (d) Oliver's father

(xiii) In 'The Model Millionaire', how much did Hughie give the beggar-model?
(a) One sovereign (all he had) (b) 10 pounds (c) 100 pounds (d) Nothing

(xiv) What did Baron Hausberg send Hughie and Alan as a wedding gift?
(a) Cheque for £10,000 (b) Painting (c) House
(d) Bonsai

(xv) In 'A Work of Artifice' the bonsai tree is kept in:
(a) Attractive pot that stunts it (b) Garden (c) Forest (d) Mountain

(xvi) The bonsai tree could have grown eighty feet tall on:
(a) Side of a mountain (b) Pot (c) Desert (d) Roof

(xvii) Skimbleshanks' train is:
(a) Night Mail (b) Day Express (c) Goods train (d) Toy train

(xviii) Which adjective is NOT used for Skimbleshanks?
(a) So self-contained (b) So well-bred (c) Lazy (d) So grand

(xix) In 'I Remember, I Remember', "Where is it that the cattle are grazing?" refers to:
(a) The poet's memory of childhood landscape now gone (b) Real farm (c) Dream (d) England now

(xx) The central theme of 'I Remember, I Remember' is:

- (a) Loss of innocence and homesickness
- (b) Joy of farming (c) Railway journey (d) Bonsai

SECTION B - DRAMA - 20 MARKS

Question 2 [Attempt Any ONE]

Q2. Read the extract and answer:

"Brutus: It must be by his death; and for my part, I know no personal cause to spurn at him, But for the general. He would be crown'd: How that might change his nature, there's the question."

- (i) Where is Brutus? What is he thinking about? Why is he in his orchard so early? (ii) What does Brutus fear Caesar will become if crowned? What analogy does he use of a serpent's egg?
- (iii) What does this extract reveal about Brutus as an idealist and not a conspirator?
- (iv) How does Brutus justify killing Caesar even though he loves him?
- (v) In what way does this soliloquy mark the turning point in the play?

OR

Q3. "Casca: And then he offered it the third time; he put it the third time by: and still as he refus'd it, the rabblement hooted..."

- (i) Who is narrating? What was offered to Caesar thrice? Where did this happen?
- (ii) Describe Caesar's reaction and his epileptic fit. How did the crowd react?
- (iii) What does Casca mean by "rabble"? What does it show about Roman mob?
- (iv) Why does Cassius use Casca's account to provoke Brutus?
- (v) Compare Casca's cynical character with Brutus's noble character in this scene.

SECTION C - PROSE - 20 MARKS

Q.4. "Oliver was frightened again at seeing so many gentlemen, which made him tremble... 'Please, sir, I want some more.'"

- (i) Where was Oliver now? Who were these gentlemen? Why was Oliver brought before them?
- (ii) What was the reaction of the gentlemen to Oliver's request?
- (iii) What was Mr. Limbkins' prediction about Oliver?
- (iv) How does this scene show the cruelty of the Poor Law system?
- (v) Why did Dickens choose a child protagonist to expose society?

OR

Q5. "Hughie looked very black at this, but when he had sulked his half-hour away, he said..."

- (i) Who scolded Hughie? Why was Hughie "black"?
- (ii) What was Alan Trevor's advice to Hughie regarding his love for Laura? (iii) How much was Laura's father's condition for marriage?
- (iv) Describe Baron Hausberg's generosity. What lesson does Wilde give?
- (v) Comment on the title 'The Model Millionaire' - who is the real model millionaire?

SECTION D - POETRY - 20 MARKS

Q6. Read from _I Remember, I Remember_ - _"I remember, I remember, The house where I was born, The little window where the sun Came peeping in at morn..."

- (i) What does "sun came peeping" suggest? Identify figure of speech.
- (ii) What does the poet remember about his brother and his own childhood spirit?
- (iii) How does the present "now" contrast with "then"?
- (iv) What is the meaning of "my spirit flew in feathers then"?
- (v) What is Hood's message about growing up?

OR

Q7. "Skimbleshanks is a cat that cannot be ignored... He will watch you without blinking and he saw what you did not see..."

- (i) How does Eliot describe Skimbleshanks' appearance and eyes?
- (ii) Why do the passengers feel reassured when they see Skimbleshanks?
- (iii) Describe Skimbleshanks' game with the passengers and the guard.
- (iv) How does Eliot blend reality (railway working) with fantasy (cat as supervisor)?
- (v) Do you think Skimbleshanks are more human than cats? Justify.

Class IX ICSE Chemistry — Half-Yearly Examination — Set C

SILVER GROVE SCHOOL

HALF-YEARLY EXAMINATION

CLASS – IX-A | CHEMISTRY — SET C

TIME: 2 Hrs.

M.M.: 80

General Instructions

Attempt all questions from Section I.

Attempt any four questions from Section II.

The marks for each question are given in brackets.

SECTION I

(40 Marks)

Question 1

Choose the correct option. ($10 \times 1 = 10$ marks)

(i) The particle which determines the atomic number of an element is:

- (a) Electron
- (b) Neutron
- (c) Proton
- (d) Nucleus

(ii) The maximum number of electrons that can be accommodated in the K-shell is:

- (a) 1
- (b) 2
- (c) 8
- (d) 18

(iii) Which of the following is an isotope pair?

- (a) ^{12}C and ^{14}C
- (b) ^{23}Na and ^{24}Mg
- (c) ^{35}Cl and ^{39}K
- (d) ^{14}N and ^{16}O

(iv) The charge on an electron is:

- (a) Positive
- (b) Negative
- (c) Neutral
- (d) Variable

(v) Temporary hardness of water is mainly due to the presence of:

- (a) Chlorides of calcium and magnesium
- (b) Sulphates of calcium and magnesium
- (c) Bicarbonates of calcium and magnesium
- (d) Nitrates of sodium and potassium

(vi) The bond formed by complete transfer of electrons is called:

- (a) Covalent bond
- (b) Electrovalent bond
- (c) Coordinate bond
- (d) Metallic bond

(vii) Which of the following has a single covalent bond?

- (a) O_2
- (b) N_2
- (c) H_2
- (d) CO_2

(viii) A reaction in which heat is absorbed from the surroundings is:

- (a) Exothermic
- (b) Endothermic
- (c) Neutralisation
- (d) Combustion

(ix) The valency of oxygen is:

- (a) 1
- (b) 2
- (c) 3
- (d) 4

(x) The electronic configuration of chlorine (atomic number 17) is:

- (a) 2, 8, 7
- (b) 2, 7, 8
- (c) 8, 8, 1
- (d) 2, 8, 8

Question 2

Balance the following chemical equations. (5 marks)

- (a) $\text{Al} + \text{O}_2 \rightarrow \text{Al}_2\text{O}_3$
- (b) $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
- (c) $\text{K} + \text{H}_2\text{O} \rightarrow \text{KOH} + \text{H}_2$
- (d) $\text{Fe} + \text{Cl}_2 \rightarrow \text{FeCl}_3$
- (e) $\text{Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}$

Question 3

Fill in the blanks. (5 marks)

- (i) The central part of an atom is called the _____.
- (ii) The atomic number of an element is equal to the number of _____ present in its nucleus.
- (iii) Atoms of the same element having different mass numbers are called _____.
- (iv) The outermost shell of an atom is called the _____ shell.
- (v) Water free from dissolved salts is called _____ water.

Question 4

Answer the following in one word or one sentence. (5 marks) (i)

Name the subatomic particle having no charge.

- (ii) What is the valency of sodium?
- (iii) Name the type of bond present in HCl.
- (iv) Name one method of removing permanent hardness of water.
- (v) What type of reaction is combustion of methane?

Question 5

Give reasons for the following. (5 marks) (i)

An atom is electrically neutral.

- (ii) Noble gases are chemically stable.
- (iii) Sodium forms Na^+ ion easily.
- (iv) Ionic compounds generally have high melting points.
- (v) Hard water is unsuitable for washing with soap.

Question 6

An element has atomic number 12 and mass number 24. Answer the following. (5 marks) (i)

Find the number of protons.

- (ii) Find the number of electrons.
- (iii) Find the number of neutrons.

(iv) Write its electronic configuration.

(v) State its valency.

Question 7

Differentiate between the following. (5 marks)

(i) Proton and electron

(ii) Atom and ion

(iii) Temporary hardness and permanent hardness

(iv) Electrovalent bond and covalent bond

(v) Exothermic and endothermic reaction

SECTION II

(40 Marks)

Attempt any four questions from this Section.

Question 8

(a) Describe the main features of Thomson's atomic model. (3 marks)

(b) Mention any two limitations of Thomson's model. (2 marks)

Question 9

(a) State Bohr's postulates regarding the arrangement of electrons in an atom. (3 marks)

(b) What is meant by a shell or energy level? (2 marks)

Question 10

(a) Explain the formation of magnesium chloride (MgCl_2) by transfer of electrons. (3 marks)

(b) State the type of bond present in MgCl_2 . (1 mark)

(c) Write the ions formed during its formation. (1 mark)

Question 11

(a) What is meant by covalent bonding? (2 marks)

(b) Explain the formation of a hydrogen molecule (H_2) by covalent bonding. (2 marks)

(c) State the number of shared electron pairs in H_2 . (1 mark)

Question 12

(a) What is hard water? (1 mark)

(b) Distinguish between temporary and permanent hardness. (2 marks)

(c) Explain how temporary hardness can be removed by boiling. (2 marks)

Question 13

(a) Define valency. (1 mark)

(b) State the valencies of the following elements: (4 marks)

(i) Carbon

(ii) Nitrogen

(iii) Magnesium

(iv) Chlorine

Question 14

(a) Define an exothermic reaction and give one example. (2 marks)

(b) Define an endothermic reaction and give one example. (2 marks)

(c) Is thermal decomposition of calcium carbonate exothermic or endothermic? (1 mark)

Question 15

(a) An element X has atomic number 16. (3 marks) Find:

(i) Number of electrons

(ii) Electronic configuration

(iii) Valency

(b) An element Y has electronic configuration 2, 8, 1. (2 marks) Find:

(i) Its atomic number

(ii) Its valency

नमना प्रश्न-पत्र – C

अध-वाषक परीक्षा 2026–27 वषय:

हदी

कक्षा: 9

पणा क: 80

समय: 2½ घटे (प्रश्न-पत्र पढ़ने हेतु अतरक्त 15 मिनट) सामान्य

नदश: इस प्रश्न-पत्र को पढ़ने के लए 15 मिनट का समय दया जाएगा। इस अवध में आप के वल प्रश्न-पत्र पढ़ें, उत्तर न लखें।

ऊपर दया गया समय के वल उत्तर लखने के लए है।

इस प्रश्न-पत्र में दो खंड हैं — खंड 'अ' और खंड 'ब'। दोनों खंडों के सभी प्रश्न करना अनवाय है। प्रत्येक प्रश्न के सामने उसके अंक दए गए हैं। सभी उत्तर हदी में स्पष्ट एवं सदरं लेख में लखें।

खंड – अ

रचनात्मक लेखन

[30 अंक] प्रश्न 1. नमनलखत वषयों में से कसी एक पर लगभग 150–200 शब्दों में नबधं लखए।

[10]

(क) वद्याथ जीवन में अनशासनु का महत्व

(ख) मोबाइल फोन का वद्याथयों पर प्रभाव

(ग) जल सरंक्षण की आवश्यकता (घ)

मेरा प्रय शक्षक/शक्षका

प्रश्न 2. नमनलखत में से कसी एक पत्र को लगभग 100–120 शब्दों में लखए।

[10]

(क) औपचारक पत्र — अपने वद्यालय के प्रधानाचाय को वद्यालय में स्वच्छ पेयजल की उचत व्यवस्था कराने हेतु आवेदन-पत्र लखए।

(ख) अनौपचारक पत्र — अपने मत्र को नयमत रूप से समाचार-पत्र पढ़ने और सामान्य ज्ञान बढ़ाने की सलाह देते हुए पत्र लखए।

प्रश्न 3. नम्नलखत में से कसी एक का वणन 8–10 पंक्तियों में कीजिए।

[10]

(क) अपने वद्यालय में आयोजित स्वतंत्रता दिवस समारोह का वणन कीजिए, जैसे आपने उसे अपनी आँखों से देखा हो।

(ख) एक ऐसे चित्र का वणन कीजिए जिसमें रेलवे स्टेशन का दृश्य है — यात्री ट्रेन की प्रतीक्षा कर रहे हैं, कुछ लोग सामान लेकर खड़े हैं, बच्चे अपने माता-पिता के साथ हैं और ट्रेन प्लेटफॉर्म पर आ रही है। खंड – ब व्याकरण एवं पाठ्यपस्तक

[50 अंक] प्रश्न 4. नम्नलखत महावर्णु /लोकोक्तियों में से कसी पाँच का अर्थ लिखकर अपने वाक्य में प्रयोग कीजिए।

[5]

- (i) दाँतों तले उँगली दबाना
- (ii) आँखों का तारा
- (iii) सर पर कफ़न बाँधना
- (iv) रंगे हाथ पकड़ा जाना
- (v) पानी-पानी होना
- (vi) चार चाँद लगाना

(vii) कमर कसना प्रश्न 5. नम्नलखत में से कसी पाँच शब्दों के वलोक (वपरीताथक) शब्द लिखिए।

[5]

- (i) आशा
- (ii) सत्य
- (iii) नवीन
- (iv) आदर
- (v) लाभ

(vi) सरल (vii) नकट प्रश्न 6. नम्नलखत में से कसी पाँच शब्दों में उपसर्ग/प्रत्यय अलग करके मूल शब्द लिखिए।

[5]

- (i) असफलता
- (ii) नराशा
- (iii) मठास (iv) बचपन
- (v) सजावट
- (vi) उपयोगी

(vii) अपमानित प्रश्न 7. नम्नलखत में से कसी एक वषय पर संवाद-लेखन कीजिए।

(कम से कम 8 संवाद-वाक्य)

[5]

(क) दो मंत्रों के बीच परीक्षा में अच्छे अंक प्राप्त करने की तयारी को लेकर हुई बातचीत।

(ख) एक पस्तक -वक्रे ता और वदयाथ के बीच आवश्यक पस्तकों की खरीदारी को लेकर हुई बातचीत।

प्रश्न 8. अपठित गद्यांश

नम्नलखित गद्यांश को ध्यानपूर्वक पढ़कर नीचे दिए गए प्रश्नों के उत्तर दीजिए।

[10]

प्रकृत मनष्यु के जीवन का आधार है। पेड़-पौधे हमें केवल फल, फूल और लकड़ी ही नहीं देते, बल्कि वायु को शुद्ध करने तथा पर्यावरण का संतुलन बनाए रखने में भी महत्वपूर्ण भूमिका निभाते हैं। पेड़ों से हमें छाया मिलती है और अनेक पक्षियों तथा जीव-जंतुओं को आश्रय मिलता है। आज बढ़ती जनसंख्या और विकास के कारण वनों की संख्या लगातार कम हो रही है। इसका परिणाम जलवायु परिवर्तन, बढ़ता तापमान और वर्षा के असंतुलन के रूप में सामने आ रहा है। यदि हम समय रहते प्रकृत की रक्षा नहीं करेंगे तो आने वाली पीढ़ियों को अनेक कठनाइयों का सामना करना पड़ेगा। इसलिए प्रत्येक व्यक्ति का कर्तव्य है कि वह अधिक से अधिक पेड़ लगाए, जल बचाए और प्राकृतिक संसाधनों का वैकल्पिक उपयोग करे।

(i) प्रकृत को मनष्यु के जीवन का आधार क्यों कहा गया है?

(ii) पेड़-पौधे पर्यावरण के लिए किस प्रकार उपयोगी हैं?

(iii) वनों की संख्या कम होने से क्या परिणाम हो रहे हैं?

(iv) गद्यांश के लिए एक उपयुक्त शीर्षक लिखिए।

(v) गद्यांश में आए शब्द 'वैकल्पिक' या 'आश्रय' में से किसी एक का अपने वाक्य में प्रयोग कीजिए। प्रश्न 9.

नम्नलखित पाठों में से किसी दो भागों पर आधारित प्रश्नों के उत्तर दीजिए।

[10]

(क) "बात अठन्नी की" पाठ के आधार पर —

(i) लेखक ने अठन्नी की घटना के माध्यम से समाज की किस मानसिकता को उजागर किया है? (ii)

कहानी में ईमानदारी और आत्मसम्मान का क्या महत्व दिखाई देता है?

(ख) "काकी" पाठ के आधार पर —

(i) काकी की उपेक्षा के पीछे परिवार के सदस्यों की कौन-सी मानसिकता थी?

(ii) कहानी में बाल-मन की सर्वोदयशीलता किस प्रकार प्रकट होती है?

(ग) "महायज्ञ का परस्कार" पाठ के आधार पर —

(i) पाठ में सच्चे त्याग और सेवा की भावना किस प्रकार सामने आती है?

(ii) 'महायज्ञ का परस्कार' शीर्षक की साधकता स्पष्ट कीजिए।

(घ) "स्वर्ग बना सकते हैं" पाठ के आधार पर —

(i) मनष्यु अपने व्यवहार और कम से कम पृथ्वी को स्वर्ग के समान कैसे बना सकता है?

(ii) पाठ में परस्पर प्रेम और सहयोग को क्यों आवश्यक माना गया है?

(कसी दो भागों के उत्तर दीजिए। प्रत्येक भाग 5 अंक का है।

प्रश्न 10. नमूनलखत काव्यांशों/कविताओं में से कसी दो भागों पर आधारत प्रश्नों के उत्तर दीजिए।

[10]

(क) “साखी” — कबीर के आधार पर —

(i) कबीर ने बाहरी आडंबरों की अपेक्षा कस प्रकार के आचरण को महत्व दिया है?

(ii) कबीर की साखियों में गरु और ज्ञान के संबंध को स्पष्ट कीजिए।

(ख) “गरधर की कं डु लयों” के आधार पर —

(i) कव ने मीठी वाणी के महत्व को कस प्रकार समझाया है?

(ii) कं डु लयों में कव द्वारा दी गई कसी दो जीवनोपयोगी शिक्षाओं को अपने शब्दों में लखए।

(कसी दो भागों के उत्तर दीजिए। प्रत्येक भाग 5 अंक का है।

SAMPLE PAPER – C

HALF-YEARLY EXAMINATION 2026–27

CLASS IX – A

ENGLISH LANGUAGE – PAPER 1

Time: Two Hours

Maximum Marks: 80

General Instructions

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

Attempt all five questions.

The intended marks for questions or parts of questions are given in brackets [].

You are advised to spend not more than 30 minutes on Question 1 and 20 minutes on Question 2.

Question 1

(Do not spend more than 30 minutes on this question.)

Write a composition of 300–350 words on any one of the following: [20] (a)

Write an original short story beginning with the words:

“I knew something was wrong the moment I opened the door...”

(b)

“A small act of kindness can make a big difference.”

Narrate an incident that illustrates the truth of this statement.

(c)

“School uniforms should be compulsory.”

Express your views either for or against the statement.

(d)

You visited a village during your summer vacation after several years. Describe the changes you noticed in the village, the effect of these changes on the villagers and your opinion about them.

(e)

Study the picture given below and write a short story, description or account of what it suggests to you. Your composition must have a clear connection with the picture.

[Picture-based composition: A child helping an elderly person cross a busy road.]

Question 2

(Do not spend more than 20 minutes on this question.)

Select any one of the following: [10]

(a)

You borrowed an important book from your friend but accidentally damaged it. Write a letter to your friend apologising for the damage. Explain what happened and tell him/her how you intend to make amends.

(b)

The park in your locality has become poorly maintained. There is litter everywhere, broken benches and inadequate lighting. Write a letter to the Municipal Commissioner describing the problem and suggesting measures to improve the park.

Question 3

(a)

Your school is organising an Inter-School Science Quiz. Write a notice to be put up on the school notice board informing students about the event and inviting interested students to participate. [5]

(b)

Write an e-mail to the Principal of a neighbouring school inviting a team of students and a teacher to participate in the Inter-School Science Quiz. Give the necessary details about the event. [5]

Question 4

Read the following passage carefully and answer the questions that follow:

There are moments in life when a person discovers that courage does not always mean doing something extraordinary. Sometimes it simply means taking the right decision when nobody is watching.

Rohan was returning home from school one afternoon when he noticed a small wallet lying near a bus stop. He picked it up and looked around, but there was no one nearby. Inside the wallet were several notes, a photograph and a card bearing the owner's name and address. For a moment, Rohan wondered whether he should keep the money. His family had been saving for a new study table, and the money in the wallet could have helped them considerably.

He put the wallet safely into his schoolbag and continued towards home. On reaching home, he showed it to his mother. She looked at the card and said, "Imagine how worried the owner must be. He may need this money urgently."

The next morning, Rohan and his mother went to the address mentioned on the card. They found an elderly man at the door. The moment he saw the wallet in Rohan's hand, his face

changed with relief. He explained that the money was meant for paying his wife's medical expenses and that he had been searching for it since the previous evening.

The old man repeatedly thanked Rohan and offered him a reward. Rohan politely refused. He simply said, "I only returned what belonged to you."

On their way home, Rohan's mother smiled proudly. She told him that honesty may not always bring an immediate reward, but it gives a person something far more valuable—self-respect.

Rohan understood that day that doing the right thing is not always easy, especially when there is a temptation to do otherwise. Yet the satisfaction of an honest decision can remain with a person much longer than any material reward.

(a)

Give the meaning of the following words as used in the passage: [3]

(i) extraordinary (ii)

considerably

(iii) politely

One-word answers or short phrases will be accepted. (b)

Answer the following questions briefly in your own words:

(i) What did Rohan find near the bus stop? [2]

(ii) Why did Rohan briefly consider keeping the money? [2]

(iii) What did Rohan's mother advise him to do? [1]

(iv) Why was the elderly man especially relieved to receive the wallet? [2]

(v) What did Rohan's mother say was more valuable than a material reward? [2]

(c)

In not more than 50 words, explain why Rohan's decision to return the wallet was difficult and what he gained from making the right decision. [8]

Question 5

(a)

Fill in each of the numbered blanks with the correct form of the word given in brackets. Do not copy the passage but write in correct serial order the word or phrase appropriate to the blank space. [4]

Example: (0) entered

Last Saturday, Meera (0) _____ (enter) the school auditorium early in the morning. She

(1) _____ (volunteer) to help the teachers prepare for the annual exhibition. Several

students (2) _____ (arrange) models while others (3) _____ (decorate) the

walls. Meera (4) _____ (carry) a box of charts when she suddenly (5) _____

(notice) that one of the display boards had fallen. She immediately (6) _____ (call) the

teacher and together they (7) _____ (put) it back in place. By noon, everyone (8)

_____ (complete) the preparations.

(b)

Fill in each blank with an appropriate word. [4]

(i) The children were excited _____ the school picnic.

(ii) She has been absent _____ Monday.

(iii) The teacher divided the class _____ four groups.

(iv) We should never laugh _____ people who make mistakes.

(v) The train passed _____ the tunnel.

(vi) He insisted _____ paying the bill himself.

(vii) The little boy ran _____ his mother when he saw the crowd.

(viii) Please look _____ the notice carefully before signing it.

(c)

Join the following sentences to make one complete sentence without using and, but or so. [4] (i)

The rain stopped. The children went outside to play.

(ii) He worked very hard. He could not complete the project on time. (iii)

The boy found a purse. He handed it over to the police.

(iv) Hurry up. You will miss the beginning of the programme.

(d)

Rewrite the following sentences according to the instructions given after each. Make other changes that may be necessary, but do not change the meaning of each sentence. [8]

(i)

"I will complete the project tomorrow," Riya said to her teacher.

(Rewrite using indirect speech.)

(ii)

Mount Everest is the highest mountain in the world.

(Begin: No other.....)

(iii)

The storm damaged several houses in the village.

(Begin: Several houses.....)

(iv)

The box was too heavy for the child to lift.

(Begin: The box was so.....)

(v)

As soon as the teacher entered the classroom, the students became silent.

(Begin: No sooner.....)

(vi)

Aarav prefers cycling to travelling by bus.

(Begin: Aarav would rather.....)

(vii)

Although Neha was tired, she continued working.

(Begin: Despite.....)

(viii)

If you do not hurry, you will miss the train.

(Begin: Unless.....)

SAMPLE PAPER – C

HALF YEARLY EXAMINATION – 2026

CLASS IX – A

GEOGRAPHY

M.M. – 80

TIME: 2 HOURS

GENERAL INSTRUCTIONS

This question paper is divided into two sections – A and B.

Section A is compulsory.

Attempt any five questions from Section B.

It is compulsory to attempt all the subsections of the questions chosen.

The sequence of the questions should be strictly followed. Draw neat and well-labelled diagrams wherever required.

SECTION – A

30 MARKS

(Compulsory)

Q1. Answer the following questions briefly:

(10 × 1 = 10)

- A) What is meant by the Great Circle?
- B) What is the significance of the Prime Meridian?
- C) Why does the Earth have different seasons?
- D) Name the three main layers of the Earth's interior.
- E) What is the point inside the Earth where an earthquake originates called?
- F) Name the two main types of volcanoes based on their period of activity.
- G) What is meant by exfoliation?
- H) What is a sedimentary rock?
- I) Define mass wasting.
- J) Name one warm ocean current and one cold ocean current.

Q2. On the given outline map of the world, mark and name the following using suitable colours:

(10 × 1 = 10)

- A) Indian Ocean
- B) Strait of Gibraltar
- C) River Yangtze
- D) Caspian Sea
- E) Sea of Japan
- F) Red Sea
- G) River Mississippi
- H) River Loire
- I) South China Sea
- J) River Danube

Q3. Choose the correct option:

(10 × 1 = 10)

A)

The shape of the Earth is best described as:

i) Perfect sphere ii) Geoid iii) Flat disc iv)

Cylinder

B)

Assertion (A): The Equator divides the Earth into two equal halves.

Reason (R): The Equator is the largest circle of latitude.

- i) Both A and R are true and R is the correct explanation of A. ii) Both A and R are true but R is not the correct explanation of A. iii) A is true but R is false. iv) A is false but R is true.

C)

The angular distance of a place east or west of the Prime Meridian is called:

i) Latitude ii)

Longitude

iii) Altitude

iv) Time zone

D)

Which layer of the Earth lies between the crust and the core?

i) Lithosphere ii) Mantle iii) Atmosphere iv) Hydrosphere

E)

Which of the following is an example of physical weathering?

i) Carbonation ii) Oxidation iii) Frost action iv) Solution

F)

If the time at Greenwich is 12 noon, the local time at 45° E will be:

i) 9 a.m. ii) 12 noon iii) 3 p.m. iv) 6 p.m.

G)

Which of the following is mainly formed by river deposition?

i) Gorge ii) Waterfall iii) Delta iv) V-shaped valley

H)

The nearest position of the Moon to the Earth is called:

i) Apogee ii) Perigee iii) Aphelion iv) Perihelion

I)

Assertion (A): Metamorphic rocks are formed from pre-existing rocks.

Reason (R): Heat and pressure can change the form and structure of

rocks. i) Both A and R are true and R is the correct explanation of A. ii) Both

A and R are true but R is not the correct explanation of A. iii) A is true but R

is false. iv) A is false but R is true.

J)

Which landform is generally associated with the lower course of a river? i)

Waterfall

ii) V-shaped valley

iii) Delta iv) Gorge

SECTION – B

50 MARKS

Attempt any five questions from this section. It is compulsory to attempt all the subsections of the chosen question. Q4. a)

What is meant by the hydrosphere? Mention one reason why it is important for life on Earth. (2)

b)

Explain how the ship's mast experiment provides evidence that the Earth is spherical. (2) c)

Give reasons for the following: (3)

i) The Earth is called a unique planet.

ii) The atmosphere is essential for life on Earth. iii) The Earth is slightly flattened at the poles. d)

Draw a neat and well-labelled diagram showing the water cycle. (3)

OR

Draw a neat and well-labelled diagram showing the Bedford Level Experiment. (3) Q5.

a) Define the following terms: (2)

i) Local Time ii)

Standard Time

b)

Calculate the local time at 60° E longitude when the time at Greenwich is 8:00 a.m. (2) c)

Give reasons for the following: (3)

i) The length of parallels decreases towards the poles.

ii) The International Date Line is not a completely straight line. iii) The Prime Meridian is important in determining time. d) Give a geographical term for each: (3)

i) The 0° latitude.

ii) The 180° longitude. iii) The system of lines of latitude and longitude on the Earth. Q6. a)

Differentiate between rotation and revolution of the Earth on any two points. (2) b)

What is an equinox? Name the two equinoxes. (2) c)

Give reasons for the following: (3)

i) The Earth has a leap year after every four years.

ii) Seasons are opposite in the Northern and Southern Hemispheres. iii) The Sun appears to move from east to west across the sky. d)

Draw a neat and well-labelled diagram showing the Summer Solstice and Winter Solstice. (3) Q7. a)

Mention two differences between young fold mountains and old fold mountains. (2) b)

Explain the following: (2)

i) Block Mountains ii)

Residual Mountains

c)

Describe the crust, mantle and core with reference to their location and composition. (3) d)

Draw a neat and well-labelled diagram showing the formation of a rift valley. (3)

OR

Draw a neat and well-labelled diagram showing the formation of fold mountains. (3) Q8.

a) Give one point of difference between: (2)

i) Sedimentary rocks and Igneous rocks ii) Thermal metamorphism and Dynamic metamorphism b)

Why are rocks considered important natural resources? Give two examples of their economic uses. (2)

c) Give the geographical term for the following: (3)

i) Rocks formed by cooling and solidification of molten magma. ii) Rocks formed due to heat and pressure acting on existing rocks. iii) The process by

which sediments are compacted and cemented into rocks. d) Give reasons for the following: (3)

- i) Igneous rocks are called primary rocks.
- ii) Sedimentary rocks are generally found in layers.
- iii) Fossils are mainly found in sedimentary rocks. Q9. a)

What is an earthquake? Name the instrument used to record earthquake waves. (2) b)

Mention two differences between P-waves and S-waves. (2) c)

With reference to earthquakes, explain the following: (3)

- i) Focus and Epicentre
- ii) Seismic Waves
- iii) Richter Scale

Draw a neat and well-labelled diagram showing the focus, epicentre and seismic waves of an earthquake. (3)

OR

Draw a neat and well-labelled diagram showing the structure of a volcano. (3)

Q10. a)

What is chemical weathering? Name any two processes of chemical weathering. (2) b)

Draw a neat and well-labelled diagram of a meander and oxbow lake. (2)

OR

Draw a neat and well-labelled diagram of a waterfall. (2) c)

Give the technical term for the following: (3)

- i) The process in which rocks are broken down without changing their chemical composition.
 - ii) The removal and transportation of weathered material by natural agents.
 - iii) The reaction of minerals with carbonic acid in rocks. d) Give reasons for the following: (3)
- i) Weathering is important for the formation of soil.
 - ii) Meanders are commonly formed in the middle course of a river.
 - iii) Wind erosion is more effective in deserts.

Q11. a)

State two differences between spring tides and neap tides. (2) b)

What are ocean currents? Mention any two factors responsible for their movement. (2) c)

Give reasons for the following: (3)

- i) There are usually two high tides and two low tides in a day.
- ii) The western coast of Europe has a mild climate.
- iii) The Atacama Desert receives very little rainfall. d)

Draw a neat and well-labelled diagram showing the formation of spring tides. (3)

OR

Draw a neat and well-labelled diagram showing the position of the Sun, Earth and Moon during neap tides. (3)

Time Allowed: 2 Hours

Maximum Marks: 80

General Instructions:

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

Section A is compulsory. Attempt all questions from Section A.

Section B contains six questions. Attempt any four questions from Section B.

The intended marks for questions or parts of questions are given in brackets [].

SECTION A (40 Marks)

(Attempt all questions from this section)

Question 1

Choose the correct option for each of the following questions: [$15 \times 1 = 15$]

1. Which of the following is a fundamental unit?

- (a) Newton
- (b) Pascal
- (c) Kelvin (d) Joule

2. The pitch of a screw gauge is 1 mm and its circular scale has 100 divisions. Its least count is:

- (a) 0.01 cm
- (b) 0.001 cm
- (c) 0.1 mm
- (d) 0.001 mm

3. The time period of a simple pendulum depends upon:

- (a) Mass of the bob
- (b) Length of the pendulum
- (c) Amplitude of oscillation
- (d) Material of the bob

4. The slope of a velocity-time graph gives:

- (a) Distance
- (b) Displacement
- (c) Speed
- (d) Acceleration

5. A body falls freely under gravity. Its acceleration is:

- (a) Zero
- (b) Variable
- (c) Uniform
- (d) Infinite

6. Inertia of a body depends directly on its:

- (a) Velocity
- (b) Acceleration
- (c) Mass
- (d) Volume

7. The SI unit of linear momentum is:

- (a) kg m s^{-1}
- (b) kg m s^{-2}
- (c) N s^{-1} (d) J s

8. When a bus suddenly takes a sharp turn, passengers are thrown outwards due to:

- (a) Inertia of rest
- (b) Inertia of motion
- (c) Inertia of direction
- (d) Centripetal force

9. The pressure exerted by a liquid column of height h and density ρ is given by:

- (a) $h \rho g$
- (b) $h / (\rho g)$
- (c) $(h \rho) / g$ (d) $h^2 \rho g$

10. The barometric height at sea level under normal conditions is approximately:

- (a) 76 mm of Hg
- (b) 76 cm of Hg
- (c) 0.76 cm of Hg
- (d) 760 cm of Hg

11. An object experiences maximum upthrust when it is:

- (a) Partially immersed in a liquid
- (b) Fully immersed in a liquid
- (c) Placed on the surface of a liquid
- (d) Floating in air

12. The buoyant force acting on a body submerged in a liquid acts:

- (a) Vertically downward
- (b) Horizontally
- (c) Vertically upward
- (d) In all directions equally

13. A solid of density ρ_s floats in a liquid of density ρ_l with a part of its volume submerged. Which condition must be true?

- (a) $\rho_s > \rho_l$
- (b) $\rho_s = \rho_l$
- (c) $\rho_s < \rho_l$ (d) $\rho_s \geq \rho_l$

14. SI unit of relative density is:

- (a) kg m^{-3}
- (b) g cm^{-3}
- (c) N m^{-2}
- (d) It has no unit

15. Hydraulic press works on the principle of:

- (a) Archimedes' Principle
- (b) Pascal's Law
- (c) Law of Floatation
- (d) Newton's Third Law

Question 2

- (a) Differentiate between fundamental quantities and derived quantities with one example of each. [2]
- (b) A pendulum completes 40 oscillations in 80 seconds. Calculate its: i. Time period ii. Frequency [2]
- (c) State Newton's Second Law of Motion. Write its mathematical expression. [2]
- (d) Explain why a swimmer pushes water backward to swim forward. [2]
- (e) State Pascal's Law of liquid pressure transmission. [2]

Question 3

- (a) Why are atmospheric pressure measurements taken in terms of mercury column height rather than water column height? Give two reasons. [2]
- (b) A block of wood of mass 12 kg floating in water displaces 0.012 m^3 of water. Calculate the upthrust acting on the block. (Take $g = 10 \text{ m s}^{-2}$) [2]
- (c) What is meant by backlash error in a screw gauge? How can it be avoided? [2]
- (d) Draw a displacement-time graph for a body moving with uniform velocity. [2]
- (e) Define Relative Density. How is it related to the density of a substance in SI units? [2]

SECTION B (40 Marks)

(Attempt any four questions from this section)

Question 4

- (a) What is zero error in a Vernier Caliper? Explain positive zero error with a neat diagrammatic explanation or description. [3]
- (b) A car starting from rest acquires a velocity of 72 km h^{-1} in 10 seconds. Calculate: i. Acceleration of the car in m s^{-2} ii. Total distance traveled by the car in this time interval [3]
- (c) Derive the second equation of motion, $s = ut + \frac{1}{2}at^2$, graphically or analytically. [4]

Question 5

- (a) Define force. Distinguish between contact forces and non-contact forces with two examples of each. [3]
- (b) A force of 50 N acts on a body of mass 10 kg initially at rest for 4 seconds. Calculate: i. Final velocity attained by the body ii. Change in linear momentum of the body [3]
- (c) State the Law of Conservation of Linear Momentum. Derive the expression $m_1u_1 + m_2u_2 = m_1v_1 + m_2v_2$ for a direct collision of two bodies. [4]

Question 6

- (a) Mention three factors on which the pressure at a point inside a liquid depends. [3]
- (b) The area of the small piston of a hydraulic press is 5 cm^2 and that of the large piston is 100 cm^2 . A force of 50 N is applied to the small piston. Calculate: i. The pressure exerted on the small piston ii. The force exerted on the large piston [3]
- (c) What is a simple barometer? Describe its construction with a labeled diagram, and state one main drawback of a simple barometer. [4]

Question 7

- (a) State Archimedes' Principle. Mention two applications of Archimedes' principle in daily life. [3]

(b) A solid body weighs 2.0 N in air and 1.5 N when completely immersed in water. Calculate:
i. Upthrust on the body ii. Volume of the body (Density of water = 1000 kg m^{-3} , $g = 10 \text{ m s}^{-2}$) iii. Relative density of the solid [3]

(c) State the Law of Floatation. Derive the relation between the fraction of the volume of a floating body immersed in a liquid and the densities of the body and the liquid:

$$V_{\text{immersed}} / V_{\text{total}} = \rho_{\text{body}} / \rho_{\text{liquid}} \text{ [4]}$$

Question 8

(a) Give reasons for the following:

i. An egg sinks in fresh water but floats in a strong salt solution.

ii. It is easier to pull a bucket of water out of a well as long as it remains inside the water. [3] (b)

A body of volume 100 cm^3 is immersed in alcohol of density 0.8 g cm^{-3} . Calculate: i.

Weight of alcohol displaced ii. Upthrust on the body in gf [3]

(c) Explain the working mechanism of a submarine in terms of the principle of floatation and buoyancy. How does it submerge and resurface? [4]

Question 9 (a)

Explain why:

i. A athlete runs a short distance before taking a long jump.

ii. High altitude climbers often suffer from nosebleeds. [3]

(b) The velocity-time graph of a moving body is shown below in concept: a body accelerates uniformly from rest to 20 m s^{-1} in 5 s, stays at 20 m s^{-1} for 10 s, and comes to rest in the next 5 s.

i. Calculate total distance traveled.

ii. Calculate average velocity for the whole journey. [3]

(c) Name two main types of errors present in a screw gauge. How are they identified and corrected? [4]