ROLL NO. | | | | | |

INDIAN SCHOOL SALALAH

FINAL EXAMINATION, FEBRUARY 2026 (AY-2025-26)

Class: IX **MATHEMATICS-(041)** **Date: 08/02/2026**

Duration: 3 hours **Maximum Marks: 80**

General Instructions:

a) This Question paper contains 38 questions. All questions are compulsory.

b) This Question paper is divided into five Sections - A, B, C, D and E.

c) In Section A, Questions no. 1 to 18 are multiple choice questions (MCQs) with only one correct option and Questions no. 19 and 20 are Assertion-Reason based questions of 1 mark each.

d) In Section B, Questions no. 21 to 25 are Very Short Answer (VSA)-type questions, carrying 2 marks each.

e) In Section C, Questions no. 26 to 31 are Short Answer (SA)-type questions, carrying 3 marks each.

f) In Section D, Questions no. 32 to 35 are Long Answer (LA)-type questions, carrying 5 marks each.

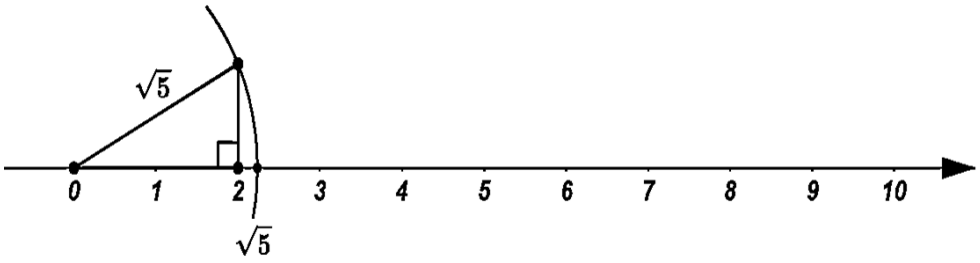
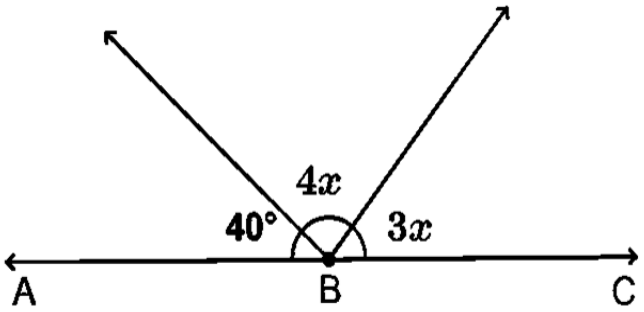
g) In Section E, Questions no. 36 to 38 are Case study-based questions, carrying 4 marks each.

h) There is no overall choice. However, an internal choice has been provided in 2 questions in Section B, 2 questions in Section C, 2 questions in Section D and one subpart each in 2 questions of Section E.

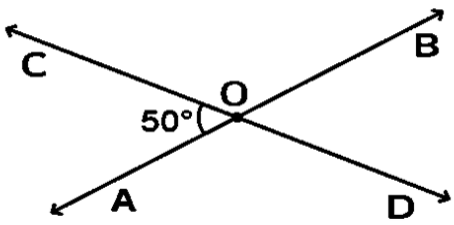
i) Draw neat diagram wherever required. Take $\pi = \frac{22}{7}$ wherever required, if not stated.

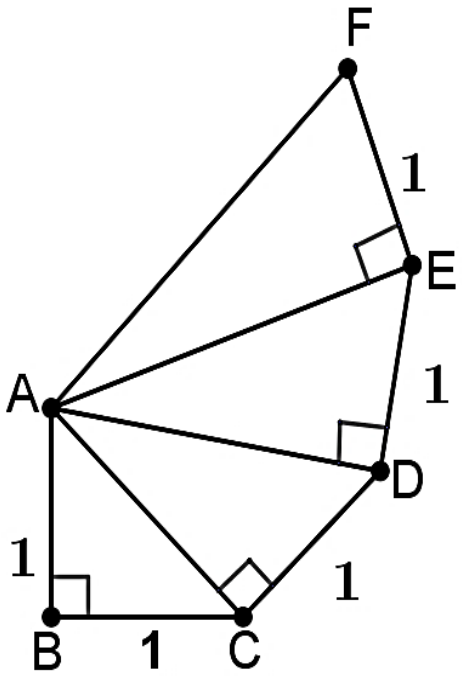
j) Use of calculator is not allowed.

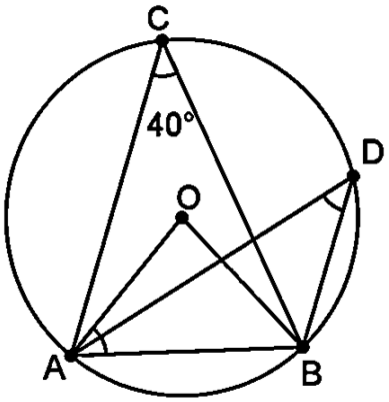
NO	SECTION A (Multiple Choice Questions)	MARKS
1	Degree of the polynomial $p(x) = 3x + 6$ is : (A) 1 (B) 3 (C) 2 (D) 0	1
2	The positive solutions of the equation $ax + by + c = 0$ always lie in the (A) First quadrant (B) Second quadrant (C) Third quadrant (D) Fourth quadrant	1
3	Which of the following needs a proof? (A) Theorem (B) Axiom (C) Definition (D) Postulate	1

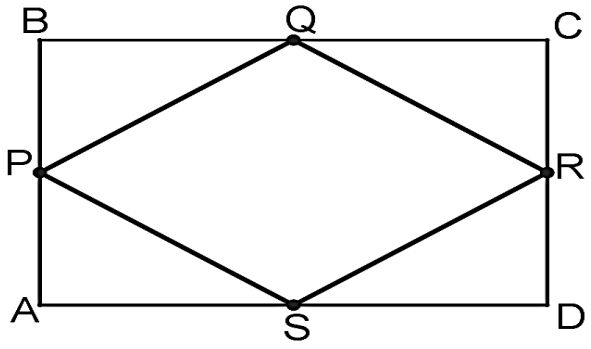
4	The given figure represents $\sqrt{5}$ on the number line. Which of the following construction is used to locate $\sqrt{5}$ on the number line?  (A) Construction of an equilateral triangle (B) Construction using a right-angled triangle based on Pythagoras theorem. (C) Construction of a circle (D) Construction of triangle.	1
5	In the given figure, ABC is a line. The value of x is:  (A) 20° (B) 25° (C) 30° (D) 35°	1
6	Which of the following is not true for a parallelogram? (A) Opposite sides are equal. (B) Opposite angles are equal. (C) Opposite angles are bisected by the diagonals. (D) Diagonals bisect each other.	1
7	Let m be the midpoint and u be the upper-class limit of a class in a continuous frequency distribution. The lower-class limit of the class is: (A) $2m - u$ (B) $2m + u$ (C) $m + u$ (D) $m - u$	1
8	For which of the following solids is the lateral / curved surface area and the total surface area are the same? (A) Cube (B) Sphere (C) Cylinder (D) Hemisphere	1

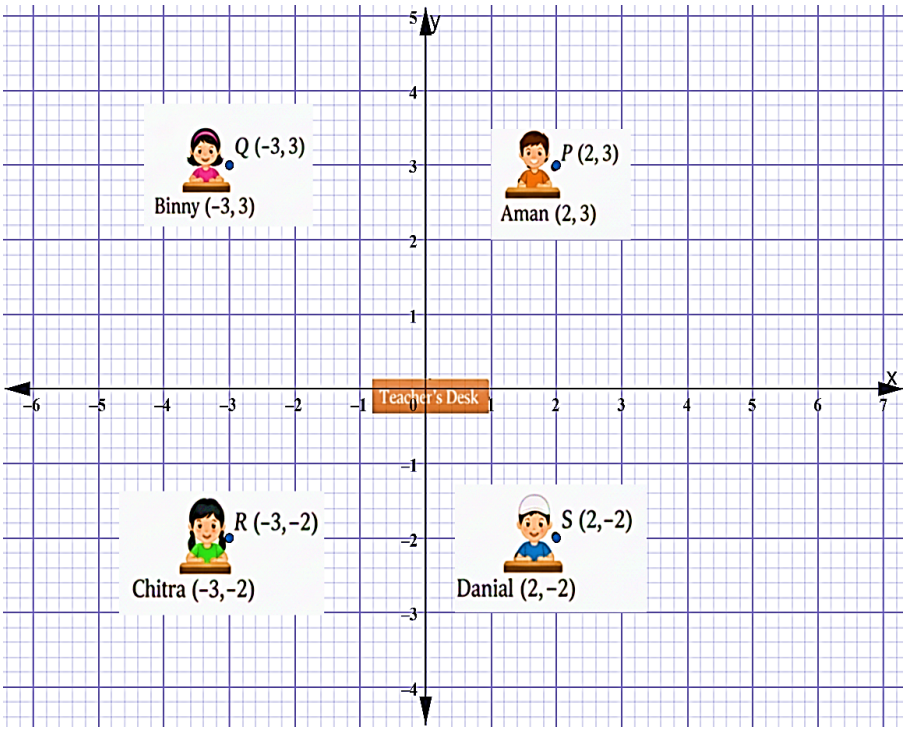
9	The class-mark of the class $100 - 120$ is: (A) 90 (B) 105 (C) 115 (D) 110	1
10	If $a + b + c = 0$, then $a^3 + b^3 + c^3$ is equal to: (A) 0 (B) abc (C) 3abc (D) 2abc	1
11	A linear equation in two variables is of the form $ax + by + c = 0$, which of the following is not true? (A) $a \neq 0, b \neq 0$ (B) $a = 0, b = 0$ (C) $a \neq 0, b = 0$ (D) $a = 0, b \neq 0$.	1
12	$2\sqrt{3} + \sqrt{3}$ is equal to: (A) 6 (B) $3\sqrt{3}$ (C) $4\sqrt{6}$ (D) $\sqrt{3}$	1
13	The perimeter of an equilateral triangle is 60 m. The area is: (A) $10\sqrt{3}$ m² (B) $100\sqrt{3}$ m² (C) $20\sqrt{3}$ m² (D) $15\sqrt{3}$ m²	1
14	If Person A is the same age as Person B, and Person C is also the same age as Person B, which Euclid's axiom confirms that Person A and Person C are the same age? (A) Things which are equal to the same thing are equal to one another. (B) The whole is greater than part. (C) If equals are added to equals, the wholes are equal. (D) If equals are subtracted from equals, the remainders are equal.	1
15	The mid-value of a class interval is 42 and the class size is 10. The lower and upper limits are: (A) $37 - 47$ (B) $37.8 - 38.9$ (C) $36.5 - 46.5$ (D) $37 - 38$	1
16	The linear equation $2x + 5y = 7$ has: (A) Unique solution (B) Two solutions (C) Infinitely many solutions (D) No solution	1
17	The sides of a Δ ABC are 3cm, 4 cm and 5 cm. Then which of the following is the semi-perimeter of the Δ ABC ? (A) 6 cm (B) 12 cm (C) 9 cm (D) 3 cm	1

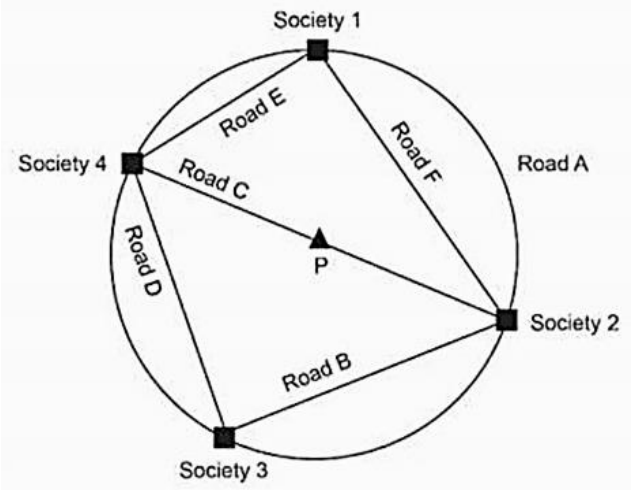
18	The radius of a sphere is 2r, then its volume will be: (A) $\frac{4}{3}\pi r^3$ (B) $\frac{32}{3}\pi r^3$ (C) $\frac{2}{3}\pi r^3$ (D) $4\pi r^2$	1
	DIRECTIONS: In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option: a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A) c) Assertion (A) is true but reason (R) is false. d) Assertion (A) is false but reason (R) is true.	
19	**Assertion (A):** Congruent triangles always have the same shape and size. **Reason (R) :** All corresponding sides and angles of congruent triangles are equal.	1
20	**Assertion (A):** A square is always a cyclic quadrilateral. **Reason (R) :** The sum of opposite angles of a square is 180°.	1
	SECTION B **(Very Short Answer Type Questions)**	
21	(A) If $p(x) = x^2 + 4x + 3$ then Find the value of $p(2) + p(1)$. **(OR)** (B) Show that $(x - 2)$ is a factor of $p(x) = x^3 - 8$.	2
22	Find the value of k, if $x = 3, y = 1$ is a solution of the equation $2x + 5y = k$	2
23	(A) If two lines intersect each other, prove that vertically opposite angles are equal. **(OR)** (B) In the given figure, two lines AB and CD intersect at O. If $\angle AOC = 50°$, find $\angle AOD$, $\angle BOD$ and $\angle BOC$. 	2

24	"If two sides and an angle of one triangle are equal to two sides and an angle of another triangle, then the two triangles must be congruent." Is the statement true? If it is false, Rewrite the given statement correctly.	2
25	Find the area of a ΔABC whose sides are $13cm, 13cm$ and $24cm$.	2
	SECTION C **(Short Answer Type Questions)**	
26	(A) Four right triangles are drawn as shown in the given figure.  (i) What is the length of AC? (ii) Find the length of AD. (iii) Find the sum of AC + AD. State whether the sum of two irrational numbers is always irrational. **(OR)** (B) Represent $\sqrt{3}$ on the number line.	3
27	Simplify: $(a + 3b)^3 + (a - 3b)^3$.	3
28	Write any three solutions for the linear equation $3x + y = 9$	3
29	The height of a cone is 24 cm and the diameter of its base is 14 cm. Find: (i) The slant height of the cone. (ii) Volume of the cone. $\left(\text{Use } \pi = \frac{22}{7}\right)$	3

30	Draw a histogram for the following data. <table><tr><td>Class interval</td><td>$10-20$</td><td>$20-30$</td><td>$30-40$</td><td>$40-50$</td><td>$50-60$</td></tr><tr><td>Frequency</td><td>7</td><td>11</td><td>9</td><td>13</td><td>16</td></tr></table>	3
31	(A) In the given figure, A, B, C and D are four points on a circle with center O.  (i) Find $\angle AOB$, $\angle OAB$, $\angle OBA$ and $\angle ADB$. (ii) Priya claims, "The length of OA is equal to the length of OB." Arun and Rani provide different justifications for Priya's claim. Arun says: "OA and OB are radii of the same circle. " Rani says: "OA is the base of $\angle AOB$." Who has given the correct justification for Priya's claim? **(OR)** (B) If two equal chords of a circle intersect within the circle, prove that the line joining the point of intersection to the center makes equal angles with the chord.	3
	SECTION D **(Long Answer Type Questions)**	
32	If $x = 4 - \sqrt{15}$ then (i) Find $\frac{1}{x}$ (ii) Find $\left(x + \frac{1}{x}\right)$ (iii) Find $\left(x - \frac{1}{x}\right)$ (iv) Find the value of $\left(x + \frac{1}{x}\right)\left(x - \frac{1}{x}\right)$ by using (ii) and (iii).	5
33	A) Factorise the polynomial: $p(x) = x^3 + x^2 - 4x - 4$ **(OR)**	5

	B) Verify that $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$ and hence factorize $8x^3 + 27y^3$. Also write down the identity for $a^3 - b^3$.	
34	(i) Prove that angles opposite to equal sides of an isosceles triangle are equal. (ii) ABC is a right-angled triangle in which $\angle A = 90°$ and $AB = AC$. Find $\angle B$ and $\angle C$.	5
35	A) State the *mid-point theorem*. Using this Theorem, in the given figure ABCD is a rectangle in which P, Q, R and S are mid-points of the sides AB, BC, CD and DA respectively. Prove that the quadrilateral PQRS is a rhombus.  **(OR)** B) (i) ABCD is a parallelogram. If its diagonals are equal, then find the value of $\angle ABC$ and $\angle ADC$. What special name can be given to this parallelogram? (ii) Prove that a diagonal of a parallelogram divides it into two congruent triangles.	5
	SECTION E **(Case Study Based Questions)**	
36	**Case Study.1** In the classroom, the positions of four students—Aman, Binny, Chitra, and Danial—are marked on a Cartesian plane as also shown in the given Figure. The Teacher's Desk serves as the reference point at the origin. ▪ The Teacher's Desk is at the Origin O (0, 0). ▪ Aman sits at P(2, 3).	

	▪ Binny sits at $Q(-3,3)$ ▪ Chitra sits at $R(-3,-2)$. ▪ Danial sits at $S(2,-2)$.  Based on above information, answer the following questions: (i) Which student is sitting in the third quadrant (Quadrant III)? (ii) Based on the above information, in which quadrant does Aman sit? (iii) a) If Binny's position is $(6,7)$. Can we also write his position as $(7,6)$? Under what specific condition would the position (x,y) be equal to the position (y,x)? **(OR)** b) Two students are seated on points whose ordinates are equal. But abscissas are different. Name the students and write their coordinates.	1 1 2
37	**Case Study.2** A circular township with centre P has four residential societies on its boundary. • Road C is a diameter connecting Society 4 and Society 2. • Road E (straight) connects Society 4 to Society 1. • Road F (straight) and Road A (curved) both connect Society 1 and Society 2.	

	The relative positions of the societies, the centre P, and all the roads are as shown in the given figure.  Based on above information, answer the following questions: (i) Based on the visual data, if Road C connects Society 4 and Society 2 through the center point P, what geometric term best describes Road C in relation to the circular township? (ii) Name the quadrilateral formed by joining Society 1, Society 2, Society 3, and Society 4 in order. (iii) a) Consider the triangle formed by Society 4, Society 1, and Society 2 (connected by Road E, Road F, and Road C). If Road C is the diameter of the circle, what is the measure of the angle at Society 1 (the angle between Road E and Road F)? Explain your reasoning using circle theorems. **(OR)** b) If the straight road from Society 4 to Society 1 (Road E) is 8 km long and the straight road from Society 1 to Society 2 (Road F) is 6 km long, calculate the total length of the diameter (Road C).	1 1 2
38	**Case Study.3** An architect is designing a futuristic science museum. The centre of the museum will feature a massive, hollow hemispherical dome made of glass, which sits on a circular base. To add to the aesthetic, a smaller, solid metallic sphere representing a planet will be suspended exactly at the centre of the dome's base. Measurements provided by the architect: • The radius of the hemispherical dome R is 21 meters.	

- The radius of the solid metallic sphere r is 7 meters.

Based on above information, answer the following questions:

(i) State the formula for the total surface area of a solid hemisphere of radius r. 1

(ii) Write the value of r for which the volume of a sphere is numerically equal to its surface area. 1

(iii) a) The architect wants to coat the entire exterior surface of the hemispherical glass dome with a UV-protective layer. What is the total surface area to be coated? (use $\pi = \frac{22}{7}$) 2

(OR)

b) Ignoring the space occupied by the small metallic sphere, how much air (volume) is contained within the hemispherical dome?

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