



परमाणु ऊर्जा शिक्षण संस्था

Atomic Energy Education Society

वार्षिक परीक्षा / Annual Examination 2025-26

कक्षा / Class : IX

अवधि/ Duration : 3 Hrs

विषय / Subject : MATHEMATICS

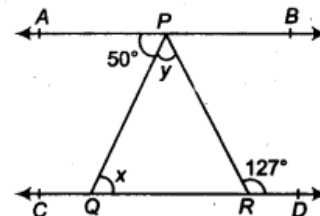
अधिकतम अंक/ Max Marks :80

सामान्य निर्देश / General Instructions:

1. This question paper contains-five sections A, B, C, D and E. Each section is compulsory.
2. Section A has 18 MCQ'S and 02 Assertion-Reason based questions of 1 mark each.
3. .Section B has 5 Very Short answer type questions of 2 marks each.
4. Section C has 6 Short Answer (SA)- type questions of 3 marks each.
5. Section D has 4 Long Answer (LA)- type questions of 5 marks each.
6. Section E has 3 Case based integrated units of assessment (4marks each) with sub-parts of the values of 1,1 and 2 marks each.
7. An internal choice in 2 questions of 5 marks, 2 questions of 3 marks and 2 questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of section E.
8. Take $\pi= 22/7$, unless stated otherwise.

SECTION - A

1. The product of any two irrational numbers is: [1]
(a) always an irrational number (b) always a rational number
(c) always an integer (d) sometimes rational, sometimes irrational
2. Which of the following is a zero of the polynomial $p(x) = 2x + 1$? [1]
(a) 2 (b) -1 (c) -1/2 (d) 1/2
3. The value of $(3)^3 + (5)^3 - (8)^3$ is [1]
(a) 260 (b) -360 (c) -160 (d) 160
4. $(-5 + 2\sqrt{5} - \sqrt{5})$ is [1]
(a) an irrational number (b) a positive rational number
(c) a negative rational number (d) zero
5. "If equals are added to equals, the wholes are equal." This statement is an example of: [1]
(a) a definition (b) a postulate (c) an axiom (d) a theorem
6. In the given figure, if $AB \parallel CD$ and $\angle APQ = 50^\circ$ and $\angle PRD = 127^\circ$, find the value of x. [1]
(a) 50° (b) 77° (c) 127° (d) 100°



7. In $\triangle ABC$ and $\triangle PQR$, $AB = PQ$, $BC = QR$ and $\angle B = \angle Q$. The two triangles are congruent by which criterion? [1]
 (a) SAS (b) ASA (c) SSS (d) RHS
8. A quadrilateral has three acute angles, each measuring 80° . The measure of the fourth angle: [1]
 (a) 40° (b) 120° (c) 140° (d) 160°
9. In a circle with centre O, a chord AB is drawn. If the length of the chord AB is 8 cm and the perpendicular distance from the centre O to the chord is 3 cm, the radius of the circle is [1]
 (a) 5 cm (b) 4 cm (c) 3 cm (d) 10 cm
10. If $5^{x+3} = 25$, then the value of x is: [1]
 (a) -2 (b) -1 (c) 1 (d) 2
11. The radius of a sphere is $2r$, then its volume will be: [1]
 (a) $\frac{4}{3}\pi r^3$ (b) $4\pi r^3$ (c) $\frac{8}{3}\pi r^3$ (d) $\frac{32}{3}\pi r^3$
12. The total surface area of a right circular cone with radius r and slant height l is: [1]
 (a) πrl (b) $2\pi r(r + h)$ (c) $\pi r(r + l)$ (d) $2\pi rh$
13. The class mark of the class interval 90–120 is: [1]
 (a) 90 (b) 120 (c) 105 (d) 30
14. The decimal expansion of $1/11$ is: [1]
 (a) $0.\overline{09}$ (b) $0.0\overline{9}$ (c) $0.\overline{9}$ (d) 0.009
15. The coefficient of x^2 in the polynomial. $P(x) = 3x^3 - 2x^2 + x - 4$ is: [1]
 (a) 3 (b) -2 (c) 1 (d) -4
16. The decimal expansion of a rational number is terminating if the prime factorisation of denominator consists of [1]
 (a) 2 or 5 (b) 3 or 5 (c) 9 or 11 (d) 3 or 7
17. In a parallelogram ABCD, $\angle A = 70^\circ$. Then $\angle B$ is: [1]
 (a) 70° (b) 110° (c) 90° (d) 180°
18. If $a + b + c = 9$ and $ab + bc + ca = 26$, then find $a^2 + b^2 + c^2$. [1]
 (a) 290 (b) 37 (c) 29 (d) 58

DIRECTION: In the question number 19 and 20 statement of **Assertion(A)** is followed by a statement of **Reason(R)**. Choose the correct option as given:

- (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.
19. **Assertion (A):** The equation $y = 3$ is a linear equation in two variables.

Reason (R): It can be written as $0x + 1y = 3$. [1]

20. **Assertion (A):** The diagonals of a rectangle bisect each other and are equal.

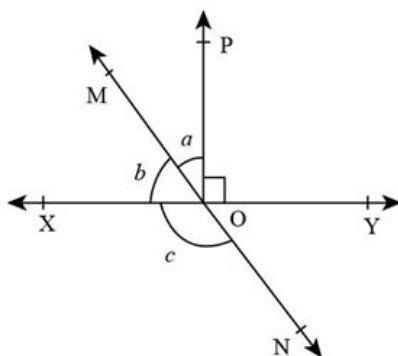
Reason (R): A rectangle is a special type of parallelogram. [1]

SECTION B

21. Express $0.4\overline{7}$ in the form p/q , where p and q are integers and $q \neq 0$. [2]

22. If $P(x) = x^2 - 4x + 3$, find $P(0)$ and $P(1)$. [2]

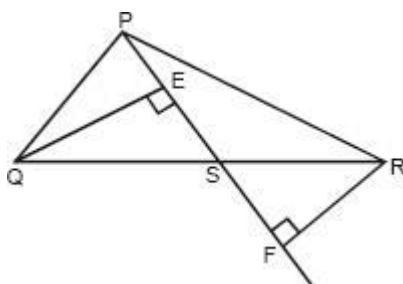
23. In the given figure, lines XY and MN intersect at O . If $\angle POY = 90^\circ$ and $a : b = 2 : 3$, find c . [2]



OR

Prove that if two lines intersect, vertically opposite angles are equal. [2]

24. In the given figure, PS is median produced upto F and QE and RF are perpendiculars drawn from Q and R . Prove that $QE = RF$. [2]



25. Find 'a', if linear equation $3x - ay = 6$ has one solution as $(4, 3)$. [2]

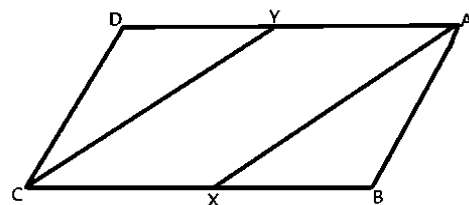
SECTION -C

26. Simplify: $(3 + \sqrt{3})(3 - \sqrt{3}) + (\sqrt{5} + \sqrt{2})^2$. [3]

27. Factorize the polynomial: $x^3 - 23x^2 + 142x - 120$ [3]

28. A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc [3]

29. ABCD is a parallelogram and line segment AX, CY bisects the angles A and C respectively. Show that $AX \parallel CY$. [3]

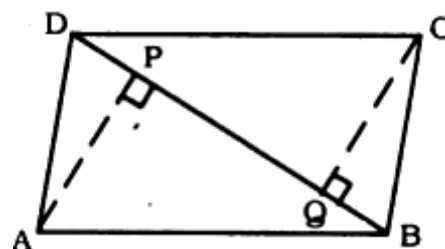


OR

ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD.

Show that

- (i) $\triangle APB \cong \triangle CQD$ (ii) $AP = CQ$ [3]



30. Find the area of a triangle, two sides of which are 18 cm and 10 cm, and the perimeter is 42 cm. [3]

OR

The sides of a triangle are in the ratio 12 : 17 : 25 and its perimeter is 540 cm. Find its area.

31. The diameter of a metallic ball is 7 cm. Find its mass if the density of the metal is 7.8g/cm^3 . [3]

SECTION D

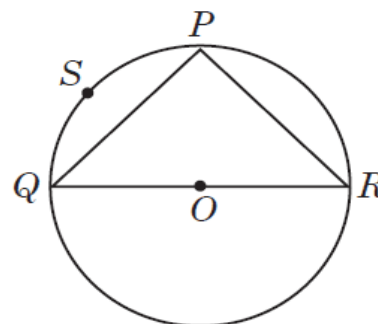
32. (a) Prove that measure of angles subtended at any point on the circumference of the circle from the same arc is equal to half of the angle subtended at the center by the same arc.

- (b) Ankit visited in a mall with his father. He sees that three shops are situated at P, Q, R as shown in the figure from where they have to purchase things according to their need. Distance between shop P and Q is 8 m, that of between shop Q and R is 10 m and between shop P and R is 6 m.

Considering O as the centre of the circle, answer the following questions.

- (i) What is the length of the longest chord of the circle?
(ii) Find the measure of $\angle QPR$.

[3+2]



33. The following table gives the life times of 400 neon lamps:

Represent the given information with the help of a histogram.

[5]

Lifetime (in hr)	Number of lamps
300 – 400	14
400 – 500	56
500 – 600	60
600 – 700	86
700 – 800	74
800 – 900	62
900 – 1000	48

34. A conical tent is 10 m high, and the radius of its base is 24 m. Find out [5]
 (i) the slant height of the particular tent.
 (ii) cost of the canvas needed to make the tent if the cost of 1 m^2 canvas is Rs 70.

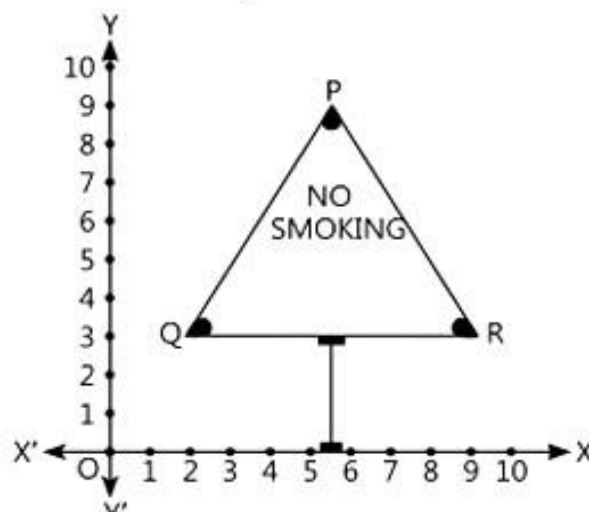
OR

The volumes of two spheres are in ratio 64 : 27. Find their radii, if the sum of their radii is 21 cm.

35. In an isosceles triangle ABC, with $AB = AC$, the bisectors of B and C intersect each other at O.
 Join A to O. Show that: i) $OB = OC$
 ii) AO bisects $\angle A$. [5]

SECTION E

36. All of the people know that smoking is injurious to health. So, some college students decided to start a campaign. To raise social awareness about the hazards of smoking, they started "NO SMOKING" campaign. Some students were asked to prepare campaign banners in the shape of triangle which is as shown in the figure:



- i. Find the coordinates of the Q and R. [1]
 ii. What is the point of intersection of x-axis and y-axis called? Also write its coordinates. [1]
 iii. Find the area of the triangle PQR. [2]

OR

- iii. If the area of another triangular banner is 28 cm^2 , with the same base length as triangular banner PQR, then find the height of the new banner. [2]

37. On his birthday, Manoj planned that this time he celebrates his birthday in a small orphanage centre. He bought apples to give to children and adults working there. Manoj donated 2 apples to each child and 3 apples to each adult working there along with Birthday cake. He distributed 60 total apples.

(a) Taking the number of children as 'x' and the number of adults as 'y'. Represent the above situation in linear equation in two variables. [1]

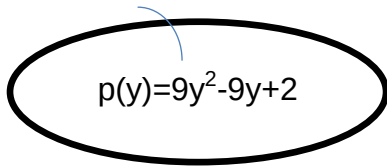
(b) If $ax + by + c = 0$ is the general form of linear equation then write the values of a, b and c in the above case. [1]

(c) If the number of children is 15, then find the number of adults. [2]

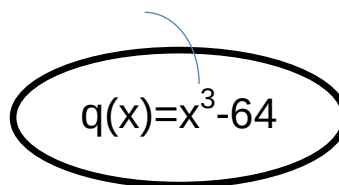
OR

(c) If the number of adults is 12, then find the number of children. [2]

38. A school organised a mathematics exhibition in the school premises. Children of all classes made various models and games to depict the use of mathematics in daily life. To make the decoration more attractive, they made hangings related to mathematics one of the students made two hangings with polynomials written on them.



$$p(y) = 9y^2 - 9y + 2$$



$$q(x) = x^3 - 64$$

(i) Find the value of value of $p(-2)$. [1]

(ii) Find the value of value of $q(4)$. [1]

(iii) Find the factors of polynomial $q(x)$. [2]

OR

(iii) Find the factors of polynomial $p(y)$. [2]
