MATHEMATICS-IX (Term-II)

Model Test Paper-1

[For S.A.-II (Term - II)]

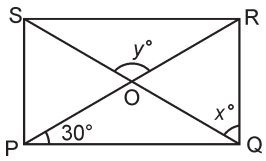
Time : 3 hours **M.M. : 90**

General Instructions : Same as in Sample Question Paper.

SECTION A

(*Question numbers* 1 *to* 8 *carry* 1 *mark each. For each question, four alternative choices have been provided of which only one is correct. You have to select the correct choice.*)

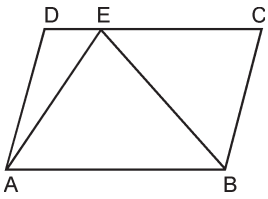
1. In the given figure, PQRS is a rectangle. If $\angle RPQ = 30°$, then the value of $(x + y)$ is :



(a) 90° (b) 120°

(c) 150° (d) 180°

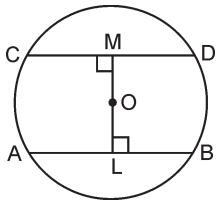
2. In the figure, if area of parallelogram ABCD is 30 cm^2, then ar (ADE) + ar (BCE) is equal to :



(a) 20 cm^2 (b) 30 cm^2

(c) 15 cm^2 (d) 25 cm^2

3. In the figure, chord AB is greater than chord CD. OL and OM are the perpendiculars from the centre O on these two chords as shown in the figure. The correct relation between OL and OM is :



(a) OL = OM (b) OL < OM

(c) OL > OM (d) none of these

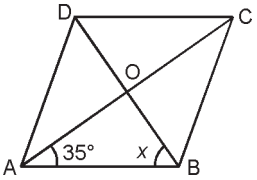
4. Ratio of the volume of a cone and a cylinder of same radius of base and same height is :

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

5. 29, 32, 48, 50, x, $x + 2$, 72, 78, 84, 95 are written in ascending order. If median of data is 63, then x is :

(a) 62 (b) 63 (c) 124 (d) 126

6. In the given figure, ABCD is a rhombus. If $\angle OAB = 35°$, then the value of x is :



(a) 25° (b) 35°

(c) 55° (d) 70°

7. If the slant height of a cone is 13 cm and the base radius is 5 cm, then the height of cone is :

(a) 12 cm (b) 8 cm (c) 10 cm (d) 18 cm

8. If P(E) denotes the probability of an event E, then :

(a) $P(E) < 0$ (b) $P(E) > 1$

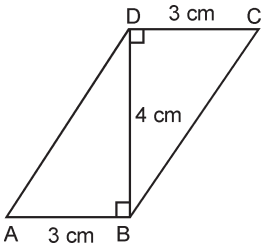
(c) $0 \leq P(E) \leq 1$ (d) $-1 \leq P(E) \leq 1$

SECTION B

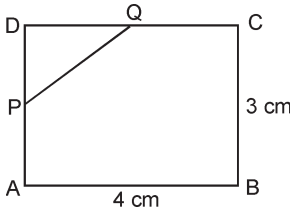
(*Question numbers* 9 *to* 14 *carry* 2 *marks each.*)

9. The cost of 6 eggs is the same as the cost of one bread. Express this statement as a linear equation in two variables. (Take the cost of one egg to be Rs x and that of a bread to be Rs y).

10. In the figure, ABCD is a quadrilateral and BD is one of its diagonals. Show that ABCD is a parallelogram and find its area.



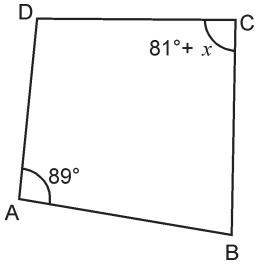
11. In the figure, ABCD is a rectangle. P and Q are the mid-points of AD and DC respectively. Find the length of PQ.



12. AOB is a diameter of a circle and C is a point on the circle. Check whether $AC^2 + BC^2 = AB^2$ is true or not.

OR

For what value of x in the figure, points A, B, C and D are concyclic?



13. If the edge of a cube is doubled, what is the ratio of the volume of the first cube to that of the second cube?

14. A die is thrown 225 times and the results were as follows :

Outcomes	1	2	3	4	5	6
Frequencies	34	50	16	71	24	30

Find the probability of getting a prime number.

SECTION C

(*Question numbers* 15 *to* 24 *carry* 3 *marks each.*)

15. Draw the graph of the equation $2y - x = 7$ and determine from the graph whether $x = 3$, $y = 2$ is its solution or not.

16. Determine the point on the graph of the linear equation $2x + 5y = 19$ whose ordinate is $1\frac{1}{2}$ times its abscissa.

17. The angles between two altitudes of a parallelogram through the vertex of an obtuse angle of the parallelogram is 60°. Find the angles of the parallelogram.

OR

ABCD is a trapezium with parallel sides AB = a cm and DC = b cm. E and F are the mid-points of the non-parallel sides. Show that the ratio of ar(ABFE) and ar(EFCD) is $(3a + b) : (a + 3b)$.

18. Construct a triangle whose sides are 4.2 cm, 3.9 cm and 6.1 cm. Bisect its greatest angle and measure each part.

19. If the perpendicular bisector of a chord AB of a circle PXAQBY intersects the circle at P and Q, prove that arc PXA ≅ arc PYB.

20. The total surface area of a solid cylinder is 462 cm^2 and its curved surface area is one third of its total surface area. Find the radius of the cylinder.

21. A hemispherical vessel full of water is emptied in a cone. The radii of the vessel and the cone are 12 cm and 8 cm respectively. Find the height of the water in the cone.

OR

A shopkeeper has one spherical ladoo of the radius 5 cm. With the same amount of material, how many ladoos of radius 2.5 cm can be made?

22. Prepare a continuous grouped frequency distribution from the following data :

Mid-point	Frequency
5	4
15	8
25	13
35	12
45	6

Also find the size of class intervals.

23. Show that if diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.

24. Find the mean of the following data :

x	4	6	8	10	12
f	4	8	14	11	3

OR

A class consists of 50 students out of which 30 are girls. The mean of marks scored by girls in a test is 73 and that of boys is 71. Find the mean score of the whole class.

SECTION D

(*Question numbers* 25 *to* 34 *carry* 4 *marks each.*)

25. Draw the graph of the linear equation $2x + 3y = 12$. At what points, the graph of the equation cuts the x-axis and the y-axis?

26. E and F are points on diagonal AC of a parallelogram ABCD such that AE = CF. Show that BFDE is a parallelogram.

27. Diagonals AC and BD of a quadrilateral ABCD intersect at O in such a way that ar(AOD) = ar(BOC). Prove that ABCD is a trapezium.

28. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

29. A cloth having an area of 165 m^2 is shaped into the form of a conical tent of radius 5 cm.

(i) How many students can sit in the tent if a student on an average, occupies $\frac{5}{7}$ m^2 on the ground?

(ii) Find the volume of the cone.

OR

The surface area of a sphere of radius 5 cm is five times the area of the curved surface of a cone of radius 4 cm. Find the height and volume of the cone.

30. Draw a histogram for the following data :

Class-interval :	25-29	30-34	35-39	40-44	45-49	50-54
Frequency :	8	15	23	20	10	9

31. Show that the diagonals of a rhombus are perpendicular to each other.

OR

Show that a diagonal of a parallelogram divides it into two congruent triangles and hence prove that the opposite sides of a parallelogram are equal.

32. The parking charges of a car in a parking lot is Rs 30 for the first two hours and Rs 10 for subsequent hours. Taking total parking time to be x hours and total charges as Rs y, write a linear equation in two variables to express the above statement. Draw a graph for the linear equation and read the charges for five hours.

33. Draw a frequency polygon for the following distribution :

Class interval	Frequency
10 – 19	20
20 – 29	15
30 – 39	45
40 – 49	60
45 – 60	12
60 – 70	6
70 – 85	15

34. Metal spheres, each of radius 2 cm are packed into a rectangular box of dimensions 16 cm × 8 cm × 8 cm. When 16 spheres are packed in the box, it is filled with preservative liquid. Find the volume of this liquid to the nearest integer. [use $\pi = 3.14$]