CLASS X
SAMPLE PAPER
MATHEMATICS

M.M. 90   Time - 3hrs

General instructions:

1- All questions are compulsory.
2- The question paper consists of 31 questions divided into four sections A, B, C, & D.
3- Section A comprises of 4 questions of 01 mark each, Section B comprises of 6 questions of 02 marks each, Section C comprises of 10 questions of 03 marks each and Section D comprises of 11 questions of 04 marks each.
4- Use of calculators is not permitted.

Section – A

1. The distance between two parallel tangents to a circle of radius 12 cm is.

2. The probability of occurrence of event A is denoted by P (A) so the range of P (A) is.

3. If the perimeter and area of a circle are numerically equal, the radius of the circle is

4. The first and last terms of an AP are 4 and 100. If the sum of all its terms is 400, then the number of terms will be

Section – B

5. For a race of 4400 m find the number of rounds one has to take on a circular track of radius 5m.

6. Find the roots of the quadratic equation $3x^2 – 5 x + 2 = 0$ by using completing the square.

7. In a quadrilateral PQRS in circumscribed touching the circle at A, B, C and D. if AP = 5 cm, QR = 7 cm and CR = 3 cm, then find the length of PQ.

8. Find the 4th term from the end of the AP -11, -8, -5... 49.

9. Twelve solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 2 cm and height 10 cm. find the diameter of each sphere.

10. Find the area of a sector of circle of radius 21 cm and central angle 120°.

SECTION C

11. An aircraft is flying at a constant height with a speed of 360 km/hour. From a point on the ground, the angle of elevation at an instant was observed to be 45°. After 20 seconds, the angle of elevation was observed to be 30°. Determine the height at which the aircraft is flying.

12. 10 circular plates each of diameter 7 cm and thickness 0.5 cm are placed one above the other to form a right circular cylinder. Find its total surface area.

13. Find the value of 'k', for which the points (8, 1), (k, − 4), (2, − 5) are collinear.

14. A bucket made of aluminum is of height 20 cm and has its upper and lower ends of radii 36 cm and 21 cm respectively. Find the cost of making the bucket if the cost of aluminum sheet is Rs 50 per 100 cm^2.

15. From the deck of 52 cards 2 red kings and 2 red jacks are removed. From the remaining cards find the probability that the card drawn is
  (i) Neither an ace nor king   **(ii)** black card or king

16. Find the 31st term of an AP whose 11th term is 38 and 16th term is 73.

17. In the figure, ABC is a right-angled triangle, ∠B=90°, AB = 28 cm and

BC = 21 cm. With AC as diameter, a semi-circle is drawn and with BC as radius a quarter circles is drawn. Find the area of the shaded region.
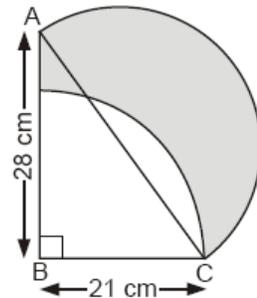
18. The area of an equilateral triangle is 64√ 3 cm^2 taking each vertex as centre; a circle is drawn with radius equal to half the length of the side of the triangle. Find the area of the triangle not included in the circles.

19. Find the sum :(-5) + (-8) + (-11) + ………… + (-230)

20. Prove that the parallelogram circumscribing a circle is a rhombus.

SECTION D

21. Find the points on the y axis whose distances from the points (6, 7) and (4,-3) are in the ratio 1: 2.

22. Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

23. Prove that the lengths of tangents drawn from an external point to a circle are equal.

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24. Solve the following equation for x,

4/ (x − 1) − 5/ (x + 2) = 3/x, x ≠ 0, 1, -2

25. Two poles of equal heights are standing opposite to each other on the either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30° respectively. Find the height of the poles and the distances of the point from the poles.

26. Water is flowing at the rate of 8 km/h through a pipe of diameter 14 cm into a rectangular tank which is 20 m long and 24 m wide, Determine the time in which the level of water in the tank will rise by 7 cm.

27. A takes 6 days less than the time taken by B to finish a piece of work. If both the A and B together can finish it in 4 days, find the time taken by B to finish the work. What value those people have in it?

28. For what value of k, the quadratic polynomial k x^2 − 8 x + k = 0 can be factorized into real linear factor.

29. Draw a triangle ABC in which AB = 5 cm and BC = 6 cm and ∠ABC = 60°. Construct another triangle similar to triangle ABC with scale factor 5/7.

30. Which term of A.P. 8, 14, 20, 26… will be 72 more than its 41st term?

31. If (-4, 3) and (4, 3) are two vertices of an equilateral triangle, find the coordinates of the third vertex, given that the origin lies in the interior of the triangle.

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