CLASS X
SAMPLE PAPER
MATHEMATICS

Max.Marks:90

Section-A

1. If 2 is a root of the equation $5x^2 + px - 16 = 0$, find 'p'.
2. Find the distance between the points (5,0) and (0,12).
3. Area of a circle is 60 cm^2. Find area of sector of central angle 60°.
4. Three circles of radius 2 cm, 3 cm and 4 cm touch each other externally. Find the perimeter of the triangle formed by joining the centres of the circles.

Section-B

5. Length of arc of a circle of radius 10.5 cm is 18 cm. Find the area of the corresponding sector.
6. A cone and a cylinder of same radius 3.5 cm have same curved surface area. If the height of the cylinder is 14 cm find the slant height of the cone.
7. What is the probability that a leap year has 53 Sundays?
8. Two circles with centre O and O' touch each other externally at D. AB is a common tangent to the circles and a tangent through D intersects AB at C. Prove that AB is bisected at C.
9. If 3 is a common root of the equations $x^2 + px + 6 = 0$ and $3x^2 - 7x + q = 0$, find the value of 'p' and 'q'.
10. Find the 15th term from the end of the A.P. 6,10,………302.

Section-C

11. Find three terms in A.P. whose sum is 48 and product is 3840.
12. Divide 30 into two parts such that square of the larger part exceeds the square of the smaller by 180.

13. AB and CD are two parallel tangents to a circle with centre 'O'. A tangent at E to the circle intersects AB and CD at P and Q. Prove that PQ subtends right angle at the centre.

14. Construct a triangle PQR given PQ = 5 cm QR = 4.5 cm ∟Q = 70°, and construct a triangle PQ'R with scale factor 5/4.

15. A bag contains 8 white, 6 Black and 10 blue balls. One ball is drawn at random. What is the probability that the drawn ball is (i) white, (ii) not black (iii) not white.

16. All face cards are removed from a well shuffled pack of cards. One card is drawn at random. What is the probability that the drawn card is (i) an ace (ii) card bearing a number that is multiple of 3 (iii) a Hearts card.

17. In what ratio does the line 2x-y+2 =0 divide the line joining the points (5,7) and (-4,3). Also find the point of intersection.

18. Show that the points A(2,3), B(5,7), and C($3,\frac{13}{3}$) are collinear.

19. An isosceles triangle is inscribed in a circle of diameter 10 cm using diameter as the base. Find the area of the circle not included in the triangle.

20. A race track of width 3.5 m has two straight sections of 60 m each with semi-circular ending whose inner radius is 35 m. Find the area of the track and the cst of maintaining it at Rs. 15/m².

Section-D

21. Two pipes together can fill a tank in $8\frac{4}{7}$ hours. If one pipe takes five hours more than the other to fill the tank find the time taken by each pipe to fill the tank functioning separately.

22. 300 logs of wood arranged in rows one on top of the other. Each row has one log less than the previous lower row. If the bottom row has 24 logs, find the number of rows.

23. A doctor treats patients in a cluster of villages free of cost for a period of 15days. If the number of patients treated on day one is 10, there after the number of patients increase by 5 each day, find the number of patients treated by the doctor. What is the value reflected by the doctor?

24. A circle of radius 2 cm inscribed in a triangle divides one of the sides at the point of contact into two segments of6 cm and 2 cm. Find the lengths of remaining two sides.

25. Prove that the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre.

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26. Angle of elevation of the top of a tower from a point on ground is α, and from a point 'p' metres vertically above the point the angle of elevation is found to be β. Show that the height of the tower $h = \frac{p \tan\alpha}{\tan\alpha - \tan\beta}$.

27. Two towers stand on the same horizontal plane. Angle of elevation of the top of the first tower from the bottom of the second was found to be 60° and the angle of elevation of the top of the second from the bottom of the first is 30°. If the height of the second tower is 20 m find the height of the first tower and the distance between them.

28. Area of a triangle is 10 square units. Two of the vertices are (2,1) and (3,-2). Third vertex lies on y = x-5. Find the third vertex of the triangle.

29. An iron pole of length 5 m has hemispherical ends. If the diameter of the pole is 42 cm find the weight of the pole if density of iron is 7.8gm/cm^3.

30. A bucket in the form of frustum of a cone has radii of top and bottom 28 cm and 21 cm respectively. If the slant height of the bucket is 25 cm find its capacity in litres.

31. A cylindrical vessel of diameter42 cm and height 35 cm is full of ice cream. Find the number of cylindrical bottles of radius 3.5 cm and height 10 cm, required to transfer all the ice cream from the bigger vessel.