CLASS X
SAMPLE PAPER
MATHEMATICS

Max.Marks:90

Section-A

1. If -2 is a common root of the equations $ax^2-ax+6=0$ and $x^2 –x +b=0$, find 'a' and 'b'.
2. 5^{th} term of an A.P. is 17 and 9^{th} term is 9. Find common difference.
3. Two tangents of a circle are inclined to each other at 25^o. What is the mea^{sure} of the angle subtended by them at the centre of the circle.
4. A pole of height 6 m casts a shadow of length $2\sqrt{3}$ m at a certain time of the day. What is the angle of elevation of the Sun?

Section-B

5. Find the area of a sector of circle whose radius is 3.5 cm and central angle 72^o
6. A box contains 14 red, 16 white and 20 green balls. One ballis drawn at random. What is the probability that the drawn ball is (i) green (ii) not white?
7. An incircle touches the sides of a right triangle whose sides making the right angle are 7cm and 24 cm respectively. Find the radius of the circle.
8. If the distance between the points (4,5) and (-3,-a) is $7\sqrt{2}$ units find 'a'.
9. If the points (1,-2), (3,6), (5,10) are consecutive vertices of a parallelogram find the fourth vertex.
10. A bag contains 12 red balls and some blue balls. By adding 6 more blue balls the probability of drawing either ball becomes equal. Find the number of blue balls.

Section-C

11. Prove that radius at the point of contact is perpendicular to the tangent.
12. Which term of the A.P. 45,42,39…..will be the first negative term?
13. 3^{rd} term of an A.P. is 5, while its 6^{th} term is 11. Find the sum of first 20 terms.

14. Divide 25 into two parts such that square of one part exceeds the square of the other by 75.
15. A circle touches side BC of ΔABC at R, and sides AB Produced at P and AC produced at Q. Prove that AB+BR = AC+CR.
16. Find the co-ordinates of the point that divides line joining the points (2,5) and (-3,8) in the ratio 4:5.
17. A kite is flying at an altitude of 600 m. If the angle of elevation is 60^o, find the length of the string-assuming there is no slackness- correct up to two places of decimal.(√3=1.732).
18. A square park has a side of 80 m. There are four circular flower beds at each corner and one in the centre of the park each of diameter 28 m. Find the area of the remaining part of the park and the caost of maintaining the flower beds at Rs.7.25/m^2.
19. An ice cream cone is conical in shape and has hemispherical top. If the total height is 7 cm and the radius of the circular part is 3 cm, find the surface area of the ice-cone.
20. Find the area between the two concentric sectors of radius 7 cm and 3.5 cm and the central angle is 30^o.

Section-D

21. AB is a tangent to a circle with centre 'O' and radius 5 cm. BD is a chord of length 6 cm intersecting OA at C. Find the length of the tangent AB.
22. PQ is tangent to a circle with centre 'O' and QR is a chord. If OP =2r prove that ΔPQR is equilateral.
23. Cost of Motor cycle is Rs. 30,000. Rajan agrees pay Rs.5000 cash down and the rest in 10 equal instalments. If interest at the rate of 8% is charged on outstanding Balance what would be the cost of motor cycle?
24. Students of a class plan for picnic. The budget of the food was Rs.2400. Eight students fail to turn up and as a result each of the rest of the students had to pay Rs.10 more. Find the number of students in the class. What is the value reflected by students of the class?
25. If the equation $(2k+1)x^2 - (7k+2)x + 6k+1 = 0$, has equal roots find the value of 'k'.
26. An aeroplane is flying horizontally at a height of 2000√3 m. From a point on the ground the angle of elevation was found to be 60^o. After a flight of 20 seconds the angle of elevation change to 30^o. Find the speed of plane in km/h.

27. If the area of ΔABC whose vertices are A(4,k), B(-2,-4) and C(6,-3) is 66 square units find 'k'.
28. From a pack of well shuffled cards all face cards are removed. One card is drawn at random. What is the probability that the drawn card is (i) a red card, (ii) an ace, (iii) a card of clubs, (iv) a card bearing number 5.?
29. A circus tent is cylindrical up to a height of 5 m and conical above it. If the total height of the tent is 12 m and diameter of the base is 48 m find the area of the canvas used to make the tent and cost of the canvas at Rs. 35/m^2.
30. A cylindrical vessel of diameter 21 cm contains water up to a certain level. 50 spherical balls of radius 2.1 cm are dropped into the vessel. Find the rise in the level of water.
31. A bucket in the shape of a frustum of a cone rests on a cylindrical base of height 6 cm. If the radius of top and bottom of frustum are 28 cm and 21 cm respectively, and the capacity of the bucket is 45.584 litres find area of the metal sheet used to make the bucket.