CLASS X
SAMPLE PAPER
MATHS

All questions are compulsory

Section A contains 4 questions of 1 mark each (4x1)=4

Section B contains 6 questions of 2 mark each (6x2)=12

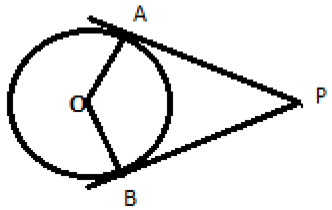
Section C contains 10 questions of 3 mark each (10x3)=30

Section D contains 11 questions of 4 mark each (11x4)=44

SECTION-A

1. Solve by factorization : (i) $\sqrt{35}x^2 - \left(\frac{5}{\sqrt{7}} + \frac{7}{\sqrt{5}}\right)x + 1 = 0$

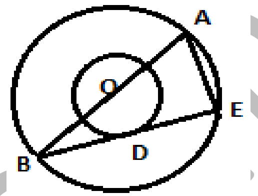
2. If the angle between two tangents drawn from a point P to a circle of radius a & centre O is 60^0, Prove that AP= $a\sqrt{3}$



3. If the points A(x, 2) B(-3, -4) C(7,-5) are collinear, find the value of x.
4. Two different dice are tossed together. Find the probability that the product of the two numbers on the top of the dice is 8

SECTION-B

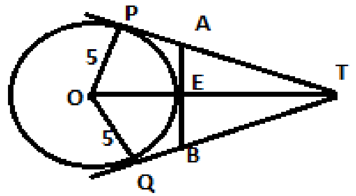
5. The radii of two concentric circles are 13cm & 8cm. AB is diameter of bigger circle. BD is tangent to smaller circle touching at D. Find AD.



6. A balloon moving in a straight line passes above two points A & B on the ground. When it is vertically above point A, its angle of elevation at B is found to be 60° when it is vertically above point B, its angle of elevation as observed from A is found to be 45°. Points A & B are 1000 meters apart. Find the distance of point A, where it touches the ground.
7. Find the probability that the month of jan. may have 5 Mondays in (i) leap year (ii) non-leap year.
8. If P(x,y) is any point on the line joining the points A(a,0) B(0,b). Then show that $\frac{x}{a}+\frac{y}{b}=1$.
9. The number of rounds that a wheel of diameter S will make in going 4km.
10. A building is in the form of a cylinder surrounded by a hemispherical vaulted dome and contains $41\frac{19}{21}$ cu m of air. If the internal diameter of the building is equal to its total height above the floor, find the height of the building.

SECTION-C

11. Distance from city P to city Q by two different routes is 81km and 85km. A car taking the longer route travels on the average 2km/h faster than one taking the shorter route and completes the journey in 15 minutes less. Find the speeds of the two cars.
12. If S_n denotes the sum of n terms of an AP & if $S_1=6$ & $S_7=105$ then show that $S_n : S_{(n-3)}=(n+3):(n-3)$.
13. O is the centre of the circle of radius 5 cm. T is a point such that OT=13cm, OT intersects circle at E. If AB is tangent at E. Find AB.

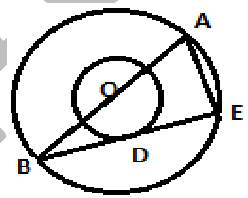


14. The angular depressions of the top & foot of the chimney, seen from the top of second chimney, which is 150m high & standing on the same level as the 1^{st} are θ & ϕ respectively. Find the distance between their tops when Tan θ =4/3 & Tan ϕ =5/2.
15. An adult & a young boy standing on the ground & 1m apart. The height of adult is 2 times the height of young boy. If at the mid point of the line joining their feet the angular elevation of their tops are complementary. Then find the height of the young boy.
16. In a garden, 40% of the flowers are roses & the rest are carnations. If ¼ of the roses & 1/10 of the carnations are red, Find the probability that flower selected at random is a (a) rose (b) carnation (c) red rose (d) red carnations.
17. A numbers x is choosen from the numbers -4, -3, -2, -1, 0, 1, 2, 3, 4. Find the probability that $|x| < 3$.
18. A spherical water pot is kept on a rectangular slab of cement 20 cm x 20 cm x 10 cm. ¼ th of the pot gets embedded into the slab for balance. If the total volume of the pot & the slab be $\frac{50,000}{7} cu.cm$, Find the radius of the pot.
19. If the wheel of an engine of a train is $4\frac{2}{7}m$ in circumference makes 7 revolutions in 4 sec, then the speed of the train is ?[27km/hr]

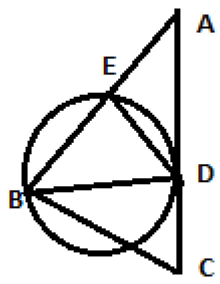
20. The diameter of rear wheel of tractor & front wheel are 2m & 80cm respectively Find number of revolutions that rear wheel will make in covering a distance in which front wheel will make in 1400 revolutions.

SECTION-D

21. The perimeter of right-angled triangle is five times the length of its shortest side. The numerical value of the area the triangle is 15 times the numerical value of the length of the shortest side. Find the three sides of the triangle.
22. A man is employed to count ₹ 10,710. He counts @ ₹ 180 per min. for half an hour. After this he counts @ ₹ 3 less every min. than the preceding min. Find the time needed to count the entire amount.
23. Simplify : $\frac{x-a}{x-b}+\frac{x-b}{x-a}=\frac{a}{b}+\frac{b}{a}$
24. A polygon of 31 sides, the length of which starting from the smallest are in A.P. if perimeter of polygon is 527 & length of largest is 16 times the smallest side. Find the common difference & smallest side.
25. The radii of two concentric circles are 13cm & 8cm. AB is diameter of bigger circle. BD is tangent to smaller circle touching at D. Find AD.



26. AB=AC, D is mid-point of AC, BD is diameter of circle. Prove that AE= ¼ AC.



27. If P & Q are two points whose coordinates are $(at^2, 2at)$ & $\left(\frac{a}{t^2}, -\frac{2a}{t}\right)$, respectively & S is the point (a,0) Show that $\frac{1}{SP}+\frac{1}{SQ}$ is independent of t.
28. If the points (5, 4) and (x, y) are equidistant from the point (4, 5), prove that $x^2 + y^2 - 8x - 10y + 39 = 0$
29. The inner perimeter of a race track is 400 m & the outer perimeter is 488 m. The length of each straight portion is 90 m. Find the cost of developing the track @ Rs 12.50 per m^2.
30. A cylinder of circumference 8cm & height 21cm rolls without sliding for $4\frac{1}{2}$ seconds@ 9 complete rounds per second. Find (i) The distance travelled by the cylinder in $4\frac{1}{2}$ sec. & (ii) the area covered by the cylinder in $4\frac{1}{2}$ sec.
31. A cylindrical vessel whose base is horizontal & radius 3.5 cm contains sufficient water so that when a sphere is placed in the can, the water just covers the sphere. Given that the sphere just fits into the can. Calculate : (i) The T.S.A. of the can in contact with the sphere is in it. (ii) The depth of the water in the can before the sphere was put into the can.

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ALL THE BEST