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Full Question Paper

Maths, X Class

www.coolGuru.net
myguru@coolGuru.net

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Time: 3 Hrs MM: 80

Instructions:

1. All questions are compulsory.
2. The questions paper consists of 34 questions divided into four sections A,B,C and D. Section – A comprises of 10 questions of 1 mark each,
3. Section – B comprises of 8 questions of 2 marks each,
4. Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 6 questions of 4 marks each.
5. Question numbers 1 to 10 in Section – A are multiple choice questions where you are to select one correct option out of the given four.
6. There is no overall choice. However, internal choice has been provided in 1 question of two marks, 3 questions of three marks each and 2 questions of four mark each. You have to attempt only one of the alternative in all such questions.

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Section –A

1. The sum of roots of the quadratic equation $2x^2 + 13x + 11 = 0$ is (a) –13 (b) -13/2 (c) 11/2 (d) –11.

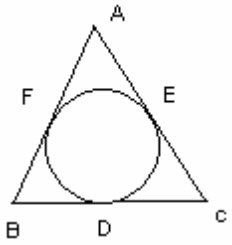
2. In an AP if a = 1, a_n = 20 and S_n = 399, then *n* is (a) 19 (b) 21 (c)38 (d)42

3. Two concentric circles are of radii 13cm and 5cm. The length of the chord of larger circle which touches the smaller circle is (a) 12cm (b) 20cm (c) 24cm (d) 26cm

4. If TP and TQ are two tangents to a circle with centre O such that $\angle POQ=110^0$, then $\angle PTQ$ is equal to : (a) 60^0 (b) 90^0 (c) 70^0 (d) 80^0

5. Two chords PQ and RS intersect at T outside the circle. If PQ =5 cm, QT = 3 cm, TS = 2 cm, length of RS is: (a) 8cm (b) 12 cm (c) 10 cm (d) 15 cm

6. A triangle ABC is drawn to circumscribe a circle. If AB = 13cm, BC= 14cm and AE = 7cm, then AC is equal to (a) 12 cm (b) 15m (c) 11cm (d) 16cm



7. The ratio of the length of a rod and its shadow is $1:\sqrt{3}$. The angle of elevation of sun is (a) 30^o (b) 45^o (c) 60^o (d) 90^o

8. Find the probability of black or red 10 from well shuffled 52 cards. (a) 2/13 (b) 2/52 (c) 4/52 (d) 4/13

9. A wire is in the form of a circle of radius 14 cm. If it is bent in the form of square. The side of square is :(a) 44 cm (b) 22 cm (c) 88 cm (d) 14 cm

10. The ratio between the volumes of two spheres is 8:27. What is the ratio between their surface areas? (a) 4:9 (b) 5:6 (c) 4:5 (d) 2:3

Section – B

11. How many counting numbers are there between 100 and 400 which leave a remainder 2 on dividing by 6?

12. Find the value of m so that the quadratic equation mx(5x-6) +9=0 has two equal roots. **Or** Solve the following quadratic equation : $x^2-3\sqrt{}5x+10=0$

13. If all the side of a parallelogram touches a circle, show that the parallelogram is a rhombus.

14. A ticket is drawn at random from a bag containing tickets numbered from 1 to 40. Find the probability that the selected ticket has number which is a multiple of 3.

15. If the coordinates of the mid-points of the sides of a triangle are (1,2),(0,–1) and (2, –1). Find the Coordinates of its vertices of the triangle.

16. In two concentric circles, a chord of the larger circle touches the smaller circle. If the length of this chord is 8cm and the diameter of the smaller circle is 6cm, then find the diameter of the larger circle.

17. If the diameter of a semicircle is 12cm, then find its perimeter.

18. The wheels of a car are of diameter 80cm each. How much complete revolution does each wheel make in 10 minutes, when the car is traveling at a speed of 66 km/ hour?

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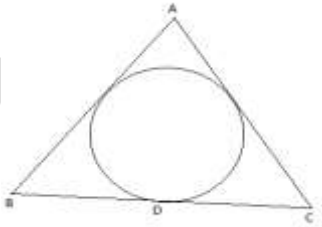
Section-C

19. In an A.P, the sum of its first ten terms is -80 and sum of its next 10 terms is -280. Find the A.P. **Or** The mth term of an AP is n and the nth term is m. Find the rth term of the AP.

20. If the roots of the equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal then prove that $2b = a + c$.

21. Draw a pair of tangents to a circle of radius 3cm, which are inclined to each other at the angle of 60^0.

22. In the given fig. a triangle ABC is drawn to circumscribe a circle of radius 6cm such that the segments BD and CD into which BC is divided by the point of contact D are of length 12cm and 9cm respectively. If the area of Δ ABC = $189cm^2$, then find the



length of side AB and AC. **Or** A circle is touching the side BC of ΔABC at P and touching AB and AC produced at Q and R respectively. Prove that AQ = ½(perimeter of ΔABC).

23. Cards marked with numbers 5 to 101 are placed in a box and mixed thoroughly. One card is drawn at random from this box. Find the probability that the number on the card is (i) a number which is a perfect square (ii) a prime number less than 30.

24. A statue 1.46m tall stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the status is 60^0 and from the same point, the angle of elevation of the top of the pedestal is 45^0. Find the height of the pedestal.

25. Point P divides the line segment joining the points A (2,1) and B(5,-8) such that AP/AB= 1/3. If P lies on the line 2x-y+k=0, find the value of K.

26. Show that the points A (2,-2) , B(14,10), C(11,13) and D (-1,1) are the vertices of a rectangle. **Or** Using A (4,-6), B(3,-2) and C(5,2),verify that a median of the triangle ABC divides it into two triangles of equal areas.

27. The area of an equilateral triangle is 17320.5 cm^2. With each vertex of the triangle as centre, a circle is drawn with radius equal to half the length of the side of the triangle. Find the total area enclosed by the three circles except that is inside the triangle.

28. From a solid cylinder, whose height is 2.4cm, and diameter 1.4cm, a conical cavity of the same height and same diameter is hollowed out. Find the surface area of the remaining solid. (take π=22/7).

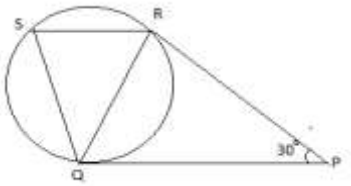
Section– D

29. An aero plane left 30 minutes later than its scheduled time , and in order to reach its destination 1500km away, it has to increase its speed by 250km/hr from its usual speed . Determine its usual speed. **Or** Find the roots of the equation $\frac{1}{2x-3} + \frac{1}{x-5} = 1$, $x \neq 3/2$, 5.

30. The sum of first five terms of an A.P and the sum of first seven terms of the same A.P is 167. If the sum of the first 10 terms of this A.P is 235, find the sum of its twenty terms.

31. A chord of a circle of radius 10cm subtends a right angle at the centre . Find (i) area of minor segment (ii) Area of major sector. (take π= 3.14)

32. In the given fig., tangents PQ and PR are drawn to a circle such that $\angle RPQ = 30^0$. A chord RS is drawn parallel to the tangent PQ. Find $\angle RQS$.



33. The angle of elevation of a cloud from a point 60 metres above a lake is 30^0 and the angle of depression of the reflection of the cloud in the lake is 60^0. Find the height of the cloud. **Or** A man on a cliff observes a boat at an angle of depression of 30^0 which is approaching the shore to the point immediately beneath the observer with a uniform speed. Six minutes later, the angle of depression of the boat is found to be 60^0. Find the time taken by the boat to reach the shore.

34. A bucket is in the form of a frustum of a cone and holds 28.49 liters of milk. The radii of the top and bottom are 28 cm and 21 cm respectively. Find the height of the bucket.