

X Mathematics term - 2-IISamplePaper- 2011

Time : 3hrs

Marks : 80

SECTION – A**Choose the correct answer****10x1=10M**

1. The difference between the circumference and the radius of a circle is 37cm. The area of the circle is
A) 149 cm^2 B) 154 cm^2 C) 12 cm^2 D) 169 cm^2
2. The area of quadrant of a circle whose circumference is 44cm is
A) 77 cm^2 B) 38.5 cm^2 C) 19.25 cm^2 D) 35.5 cm
3. A 4cm side cube is cut into 1cm side cubes, and then total surface area of all the small cubes is
A) 64 cm^2 B) 96 cm^2 C) 384 cm^2 D) 216 cm^2
4. The radii of two cylinders are in the ratio 2:3 and their heights are in the ratio 5:3. The ratio of their volumes is
A) 3:4 B) 5:3 C) 27:20 D) 20:27
5. When we lower, our head to look at the object, the angle formed by the line of sight with the horizontal is known as
A) obtuse angle B) angle of elevation C) angle of depression D) acute angle
6. If the distance between the points (8,p) and (4,3) is 5 then value of p is
A) 6 B) 0 C) both A and B D) none of these
7. The number of real roots of the equation $(x-1)^2 + (x-2)^2 + (x)^2 = 0$ is
A) 2 B) 1 C) 0 D) 3
8. The probability of getting a bad egg in a lot of 400 is 0.035. Then the number of bad eggs
A) 7 B) 14 C) 21 D) 28
9. Two APs have the same common difference. The first term of one of these is -1 and that of the other is -8. Then the difference between their 4th terms is
A) -1 B) -8 C) 7 D) -9
10. Number of tangents that can be drawn through a point which is outside the circle is
A) 3 B) 2 C) 1 D) 0

SECTION – B

11. The perimeter of a sectors of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector
12. A child has a die whose six faces shows.

A	B	C	D	E	A
---	---	---	---	---	---

The die is thrown once. What is the probability of getting i) A ? ii) D?
13. Find the area of the triangle whose vertices are (-5,-1), (3,-5), (5,2).
14. Find the number of terms of the AP54, 51, 48, so that their sum is 513.
15. Two cubes have their volume in the ratio 1:64. What is the ratio of their surface areas?

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

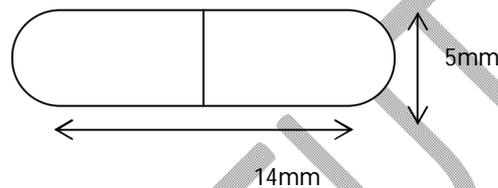
OR

Prove that the tangent to the circumcircle of an isosceles triangle ABC at a in which $AB=AC$, is parallel to BC.

17. A tower is 50m high. Its shadow is x m shorter, when sun's altitude is 45° than when it is 30° find ' x ' correct to the nearest cm.
18. "Length of field is triple of its breadth and its area is $300m^2$ ". Form a quadratic equation for the above situation.

SECTION – C

19. A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends. The length of the entire capsule is 14 mm and the diameter of the capsule is 5mm. Find its surface area.



20. Find the values of a and b , if the sum and the product of the roots of the equation $4ax^2+4bx+3=0$ are $\frac{1}{2}$ and $\frac{3}{16}$ respectively.
21. Find the points on the x -axis which are at a distance of $2\sqrt{5}$ from the point $(7,-4)$. How many such points are there?
22. One card is drawn from well-shuffled deck of 52 cards. Find the probability of getting
 i) a king of red colour ii) a face card iii) a red face card
 iv) the jack of hearts v) a spade vi) the queen of diamonds
23. Draw a right triangle in which the sides (other than hypotenuse) are of lengths 4cm and 3cm. Then construct another triangle whose sides are $1\frac{3}{4}$ times the corresponding sides of the given triangle.
24. The sum of the square of two consecutive odd numbers is 394. Find the numbers.

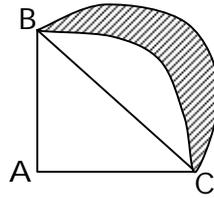
OR

The sum of first six terms of an AP is 42. The ratio of its 10^{th} term to its 30^{th} term is 1:3. Calculate the first and thirteenth term of the AP.

25. $A(6,1)$, $B(8,2)$ and $C(9,4)$ are three vertices of a parallelogram ABCD. If E is the mid-point of DC, find the area of $\triangle ADE$.
26. Sides of a triangular field are 15m, 16m and 17m. With the three corners of field a cow, a buffalo and a horse are tied separately with ropes of length 7 m each to graze in the field. Find the area of field which cannot be grazed by the three animals.

OR

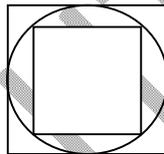
In the fig ABC is a quadrant of circle of radius 14cm and a semi-circle is drawn with BC as diameter. Find the area of the shaded region.



27. A statue 1.46m tall stand on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the status is 60° and from the same point, the angle of elevation of the top of the pedestal is 45° . Find the height of the pedestal.
28. A takes 10days less than the time taken by B to finish a piece of work. If both A and B together can finish the work in 12 days, find the time taken by B to finish the work.

OR

In fig. a square is inscribed in a circle of diameter d another square circumscribing the circle. Is the area of the outer square four times the area of the inner square? Give reasons for your answer.

**SECTION - D**

29. If the angle of elevation of a cloud from a point h metre above a lake is α and the angle of depression of its reflection in the lake is β , prove that the distance of the cloud from the point of observation is

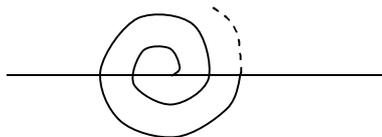
$$\frac{2h \sec \alpha}{\tan \beta - \tan \alpha}$$

OR

From an aeroplane vertically above a straight horizontal plane, the angles of depression of two consecutive kilometer stones on the opposite sides of the aeroplane are found to be α and β . Show that the height of the Aeroplane is

$$\left[\frac{\tan \alpha \tan \beta}{\tan \alpha + \tan \beta} \right]$$

30. A spiral is made up of successive semicircles, with centres alternately at A and B, starting with centre at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.0 cm, 1.5 cm, 2.0 cm. What is the total length of such a spiral made up of thirteen consecutive semicircles? (Take $\pi = 22/7$)



31. A cone of radius 10cm is divided into two parts by drawing a plane through the midpoint of its axis, parallel to its base. Compare the volumes of the two parts.
32. One pipe can fill a tank in $(x-2)$ hours and the other pipe can empty the full tank in $(x+2)$ hours. If the tank is empty and both the pipes are opened together, the tank is filled completely in 24 hours. Find how much time will the second pipe take to empty the tank?
33. 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 total surface area of the remaining solid to the nearest cm^2
34. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.