Sample Paper 2013
Class – XII
Subject – Mathematics

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**General Instructions:**

1. All questions are compulsory. There are three sections A, B, C and D in the question paper.
2. Section A: Q. Nos. 1 to 8 carry 1 mark each.

##  Section B: Q. Nos.9 to 14 carry 2 marks each*.*

 Section C: Q. Nos. 15 to 24 carry 3 mark each.

 Section D: Q. Nos. 25 to 34 carry 4 mark each.

1. There is no overall choice, however internal choices has been provided in one question of 2 marks, three questions of 3 marks and 2 questions of 4 marks. You have to attempt only one of the alternatives in all such questions.

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**SECTION: A**

1. If the equation x2 + 8x + k = 0 has real and distinct roots, then the value of ‘k’ is
2. K > 16
3. k ≥ 16
4. k ≤ 16
5. none of these
6. The probability of an impossible event is
7. 0
8. 1
9. 2
10. None of these
11. If the sector of a circle of diameter 10 cm subtends an angle of 144o at the centre then the length of the arc of the sector is
12. 2π
13. 8π
14. 4π
15. None of these
16. If the volume of a cube is 216 cubic m its edge is
17. 4 cm
18. 6 cm
19. 9 cm
20. None of these
21. If the perimeter and the area of a circle are numerically equal, then the radius of the circle is
22. π units
23. 12 units
24. 8 units
25. None of these
26. A card is drawn from a well shuffled deck of 52 playing cards. The probability that it is not a face card is
27. 14/52
28. 16/13
29. 12/52
30. None of these
31. The distance between the points (2,3), (4,1) is
32. 14√2
33. 12√4
34. 3√2
35. None of these
36. Volume of two spheres are in the ratio 125 : 27, the ratio of their radii are
37. 5: 3
38. 3: 5
39. 1: 11
40. None of these

**SECTION: B**

1. Find the roots of the quadratic equation x2 – 3x – 10 = 0
2. Find the value of ‘k’ for the equation 2x2 + k x + 3 = 0, so that it has two equal roots.
3. The angle of elevation of the top of a tower, at a distance of 150 m from its foot on a horizontal plane, is found to be 60o. Find the height of the tower.
4. Find the centroid of triangle PQR, whose vertices are P (-3, 0), Q (5, -2), R (-8, 5).

**OR**

Find the coordinates of point which divides the line segment joining the points (-1, 7) and (4, -3) in the ratio 2: 3.

1. A drinking glass is in the shape of a frustum of height 14 cm. The diameters of its two circular ends are 4 cm and 2 cm. Find the capacity of the glass.
2. Prove that, the lengths drawn from an external point to a circle are equal.

**SECTION: C**

1. A solid toy is in the form of a right circular cylinder with a hemispherical shape at one end and a cone at the other end. The common diameter is 4.2 cm and height of the cylinder and conical portion are 12 cm and 7 cm respectively. Find the volume of the solid toy.

**OR**

A toy is in the form of a cone mounted on a hemisphere of radius 3.5 cm. The total height of the toy is 15.5 cm. Find the total surface area of toy.

1. The sum of the reciprocals of Mohan’s age (in years) 3 years ago and 5 years from now is 1/3. Find his present age.
2. The first and the last term of an AP are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum.
3. Draw a pair of tangents to a circle of radius 5 cm, which are inclined to each other at an angle of 60o.
4. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the ball taken out will be
5. Red
6. Not White
7. A coin is tossed thrice. Find the probability of
8. Three tails
9. At least two tails
10. From a point on the ground, the angles of elevation of the bottom and top of a transmission tower fix at the top of a 20 m high building are 45o and 60o respectively. Find the height of the tower.

**OR**

Two poles of equal heights are standing opposite to each other on the either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60o and 30o respectively. Find the height of the poles and the distances of the point from the poles.

1. From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60o and the angle of depression of its foot is 45o. Determine the height of the tower.
2. Three cows are tethered with 10 m long rope at the three corners of a triangular field having sides 42 m, 20 m and 34 m. Find the area of the plot which can be grazed by the cows, also, find the area of the remaining field ungrazed.

OR

The wheels of a car are of diameter 80 cm each. How many complete revolutions does each wheel make in 10 minutes when the car is travelling at the speed of 66 km/h.

1. A chord of a circle of radius 12 cm subtends an angle of 120o at the centre. Find the area of the corresponding segments of the circle. (Use π = 3.14 and √3 = 1.73)

**SECTION: D**

1. A plane left 30 minutes later than the schedule time and in order to reach its destination 1500 km away in time, it has to increase its speed by 250 km/h from its usual speed. Find its usual speed.

**OR**

 Solve the equation for ‘x’ by using factorization method: 4x2 – 4a2x + (a4 – b4)

1. How many multiples of 4 lie between 10 and 250.

**OR**

 Find the 31st term of an AP whose 11th term is 38 and 16th term is 73.

1. Find the sum :(-5) + (-8) + (-11) + ………… + (-230)
2. Prove that the parallelogram circumscribing a circle is a rhombus.
3. Ram, a juice seller has set up his juice shop. He has three types of glasses of inner diameter 5 cm to serve the customers. The height of the glasses is 10 cm. (Use π = 3.14)

He decided to serve the customer in “A” type of glasses.

1. Find the volume of glass of type A.
2. Which glass has the minimum capacity?
3. Which mathematical concept is used in above problem?
4. By choosing the glass of type A, which value is depicted by juice seller Ram?



1. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.
2. A car has two wipers which do not overlap. Each wiper has a blade of length 25 cm seeping through an angle of 115o. Find the total area cleaned at each sweep of the blades.
3. Construct an isosceles triangle, whose base is 8 cm and altitude 4 cm and another triangle 3/2 times of corresponding sides of the isosceles triangle.
4. Check whether the points (1, 7), (4, 2), (-1, -1) and (-4, 4) are the vertices of a square.
5. D (7, 9), E (1, 1) and F (-3, -7) are the vertices of a triangle DEF. Let L is the midpoint of DE, M is the midpoint of EF and N is the midpoint of FD. Prove that

(Area of ∆LMN)/ (Area of ∆DEF) = 1: 4

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