GOVERNMENT HIGHER SECONDARY SCHOOL, EDAPALAYAM
VILLUPURAM – 605402

STD : IX
SUB : MATHEMATICS

TIME : 3 hrs
MARKS : 100

I. Answer the following : **14 X 1 = 14**

1. The set P = { x|x ∈ Z, -1 < x < 1 } is a _____
   a) Singleton set b) Power set c) Null set d) Subset
2. Which one of the following is an irrational number
   a) √25 b) $\sqrt{9}/\sqrt{4}$ c) 7/11 d) π
3. An irrational number between 2 and 2.5 is
   a) √11 b)√5 c) √2.5 d) √8
4. The zero of the polynomial 2x + 5 is
   a) 5/2 b)-5/2 c) 2/5 d) -2/5
5. If x – 3 is a factor of p(x), then the remainder is
   a) 3 b)-3 c) p(3) d) p(-3)
6. PQ and RS are two equal chords of a circle with center O such that ∠POQ = 70° then ∠ORS
   a) 80° b)55° c) 70° d) 60°
7. If one angle of a cyclic quadrilateral is 75°, then the opposite angle is
   a) 100° b)105° c) 85° d) 90°
8. The distance between the two points (2,3) and (1,4) is _____
   a) 2 b)√56 c)√10 d) √2
9. If (x + 2, 4) = (5, y – 2), then the coordinates (x,y) are ____
   a) (7,12) b)(6,3) c) (3,6) d) (2,1)
10. If tanθ = cot 37°, then the value of θ is
    a) 37° b)53° c) 90° d) 1°
11. If 2sin2θ = √3, then the value of θ is
    a) 90° b)30° c) 45° d) 60°
12. The lateral surface area of a cube of side 12 cm is
    a) 144 cm^2 b) 196 cm^2 c) 576 cm^2 d) 664 cm^2
13. The capacity of a water tank of dimensions 10 m x 5 m x 1.5 m is
    a) 75 liters b) 750 liters c) 7500 liters d) 75000 liters
14. Probability lies between
    a) -1 and +1 b) 0 and 1 c) 0 and n d) 0 and ∞

II. Answer any 10 of the following: question no 28 is compulsory **10 x 2 = 20**

15. If A = {1,2,3,4,5,7,9,11}, find n(A).
16. Verify that 1 = 0.9
17. Find the value of $9^{-3/2}$
18. Find the zero of p(x) = 2x + 5
19. Find the GCD of $64x^8$, $240x^6$
20. A chord is 12cm away from the center of the circle of radius 15cm. Find the length of the chord
21. Define : Circumcentre
22. Find the midpoint of (8,-2) and (-8,0)
23. Find the distance between the points (-4,3),(2,-3)

24. Evaluate : $\sin 30^\circ + \cos 30^\circ$
25. If $2\cos A = \sqrt{3}$, the find all the trigonometric ratio of angle A
26. The mean weight of 4 members of a family is 60Kg. Three of them have the weight 56Kg, 68Kg, and 72Kg respectively. Find the weight of the fourth member.
27. Find the volume of a cuboid whose dimensions are 12 x 8 x 6 meter
28. Find the TSA and LSA of the cube whose side is 8m. (or)
    Factorise $x^2 + 10x + 24$.

III. Answer any 10 of the following: question no 42 is compulsory. 10 x 5 = 50

29. a) Write down the power set of the following sets: i) A = {a,b} ii) B = {p,q,r,s}
    b) If n[P(A)] = 256, find n(A).
30. Represent the number 5.348 on the number line
31. Find the 5^{th} root of 243
32. Show that (x + 2) is a factor of $x^3 - 4x^2 - 2x + 20$
33. If $a + {}^1/_a = 6$, then find the value of $a^3 + {}^1/a^3$
34. In a circle AB and CD are two parallel chords with centre O and radius 10cm such that AB = 16cm and CD = 12cm determine the distance between the two chords?
35. Find all the angles of the given cyclic quadrilateral ABCD in the given $\angle A = 2y + 4$, $\angle B = 6x - 4$, $\angle C = 4y - 4$ and $\angle D = 7x + 2$.
36. A(-1,1), B(1,3) and C(3,a) are points and if AB = BC, the find 'a'
37. Find the points which divide the line segment joining A(-11,4) and B(9,8) into four equal parts.
38. Find the value of 8six2x cos4x sin 6x, when $x = 15^\circ$
39. If $\cos\theta : \sin\theta = 1 : 2$, then find the value of $(8\cos\theta - 2\sin\theta) / (4\cos\theta + 2\sin\theta)$
40. Two dice are rolled, find the probability that the sum is i) equal to 1 ii) equal to 4 iii) less than 13
41. The length, breath and height of a cuboid are in the ratio 7 : 5 : 2. Its volume is 35840 cm^2. Find its dimensions.
42. The dimensions of a hall is 10m x 9m x 8m. Find the cost of white washing the walls and ceiling at the rate of Rs.8.50 per m^2.

    (or)

    Factorize : $x^3 - 5x^2 - 2x + 24$

III. Answer the following: 8 x 2 = 16

43. Plot the following points in the coordinate plane and join them. What is your conclusion about the resulting figure?
    a) (-5,3) (-1,3) (0,3) (5,3) (or) b) (0,0) (-4,0) (-4,-4) (0,-4)

44. Construct the ▲LMN such that LM = 7.5cm, MN = 5cm and LN = 8cm. Locate its centroid.

    (or)

    Construct the ▲ABC with AB = 5cm, $\angle B = 100^\circ$ and BC = 6cm. Locate its circumcenter draw circumcircle.