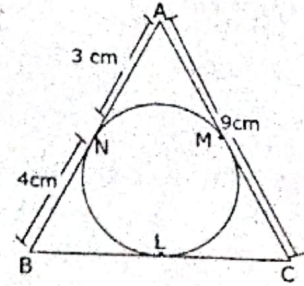


V10M

2

22) In figure ABC is circumscribing a circle. Find the length of BC.



23) The line through the points $(-2, a)$ and $(9, 3)$ has slope $-\frac{1}{2}$. Find the value of a .

24) Find the intercepts made by the line $4x - 9y + 36 = 0$ on the coordinate axes.

25) Prove the following identities: $\sqrt{\frac{1 + \sin \theta}{1 - \sin \theta}} = \sec \theta + \tan \theta$

26) Find the volume of the iron used to make a hollow cylinder of height 9 cm and whose internal and external radii are 21 cm and 28 cm respectively.

27) The range of a set of data is 13.67 and the largest value is 70.08. Find the smallest value.

28) A coin is tossed thrice. What is the probability of getting two consecutive tails?

III. Answer any 10 questions. (Q.No. 42 is compulsory)

10×5=50

29) Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 14\}$ be two sets. Let $f: A \rightarrow B$ be a function given by $f(x) = 3x - 1$. Represent this function. (i) by arrow diagram (ii) in a table form (iii) as a set of ordered pairs (iv) in a graphical form

30) If $f(x) = 2x + 3$, $g(x) = 1 - 2x$ and $h(x) = 3x$. prove that $f \circ (g \circ h) = (f \circ g) \circ h$

31) Find the middle term(s) of an A.P. 9, 15, 21, 27, 183.

32) Find the sum of all natural numbers between 100 and 1000 which are divisible by 11.

33) If the equation $(1 + m^2)x^2 + 2mcx + c^2 - a^2 = 0$ has equal roots then prove that $c^2 = a^2(1 + m^2)$

34) If $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$ show that $A^2 - 5A + 7I_2 = 0$

35) State and Prove Angle Bisector Theorem.

36) If the area of the triangle formed by the vertices $A(-1, 2)$, $B(K, -2)$ and $C(7, 4)$ (taken in order) is 22 sq.units, find the value of K .

37) To a man standing outside his house, the angles of elevation of the top and bottom of a window are 60° and 45° respectively. If the height of the man is 180 cm and if he is 5 m away from the wall, what is the height of the window? ($\sqrt{3} = 1.732$)

38) A toy is in the shape of a cylinder surrounded by a hemisphere. The height of the toy is 25 cm. Find the total surface area of the toy if its common diameter is 12 cm.

39) A metallic sphere of radius 16 cm is melted and recast into small spheres each of radius 2 cm. How many small spheres can be obtained?

40) Find the mean and variance of the first n natural numbers.

41) Two dice are rolled once. Find the probability of getting an even number on the first die or a total of face sum 8.

42) A line makes positive intercepts on co-ordinate axes whose sum is 7 and it passes through $(-3, 8)$. Find its equation.

IV. Answer the following:

2×8=16

43) Construct a ΔPQR which the base $PQ = 4.5$ cm, $\angle R = 35^\circ$ and the median RG from R to PQ is 6 cm.

(OR)

Draw a circle a diameter 6 cm form a point P , which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

44) The following table shows the data about the number of pipes and the time taken to fill the same tank

| | | | | |
|--------------------------|----|----|----|----|
| No. of pipes (x) | 2 | 3 | 6 | 9 |
| Time taken (in m in) (y) | 45 | 30 | 15 | 10 |

Draw the graph for the above data and hence.

i) find the time taken to fill the tank when five pipes are used.

ii) find the number of pipes when the time is 9 minutes.

(OR)

Draw the graph of $y = x^2 - 5x - 6$ and hence solve $x^2 - 5x - 14 = 0$.