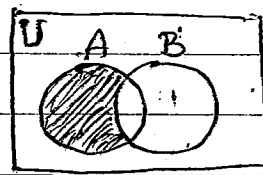


Multiple Choice Questions

1. In the given Venn diagram shaded portion represents



- (A) $A \cup B$ (B) $A \cap B$ (C) $A - B$ (D) $B - A$

2. If ${}^nP_2 = 56$ then the value of n is

- (A) 6 (B) 7 (C) 8 (D) 9

3. The Rationalising factor of $\sqrt{x+y}$ is

- (A) $\sqrt{x+y}$ (B) $\sqrt{x-y}$ (C) $\sqrt{x} + \sqrt{y}$ (D) $\sqrt{x} - \sqrt{y}$

4. A zero of the polynomial $f(x) = x^2 - x - 2$ is,

- (A) 0 (B) 1 (C) 2 (D) -2

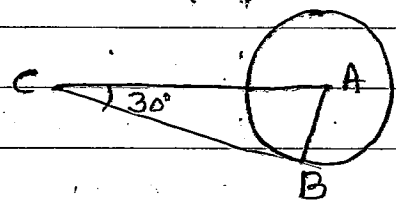
5. $\tan 45^\circ$ is equal to

- (A) $\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$ (C) 1 (D) $\frac{1}{2}$

6. The value of $\sin 50^\circ - \cos 40^\circ$ is

- (A) 0 (B) $\frac{1}{2}$ (C) $\frac{1}{4}$ (D) 1

7. In the adjoining figure BC is a tangent to the circle at the point B on the circle. If $\angle ACB = 30^\circ$, then $\angle ABC =$



- (A) 40° (B) 50° (C) 30° (D) 70°

8. The volume of a cylinder having radius 7cm and height 15cm is

- (A) 22 cm^3 (B) 2310 cm^3 (C) 2210 cm^3 (D) 105 cm^3

One mark questions

9. Find the HCF of 55 and 210.

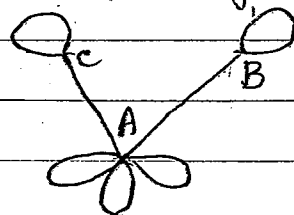
10. What is the probability of getting an even number while throwing a dice?

11. Evaluate θ ~~if $\sec \theta = 2$~~ if $\sec \theta = 2$.

12. The height and radius of the base of a cone and cylinder are equal. If the volume of cylinder is 36 cm^3 , what is the volume of cone?

13. Mention any one condition for traversability of graph.

14. What is the order of node A in the given graph.



Two marks questions.

15. Find the HCF and LCM of 12, 15 and 30 by the method of expressing the number as the product of prime factors.

16. If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ $A = \{1, 2, 3\}$ $B = \{2, 3, 4, 5\}$ then prove that $(A \cup B)' = A' \cap B'$.

17. If the 8th term of an AP is 17 and its 19th term is 39, then find its 25th term.

18. Find the AM between $\frac{1}{2}$ and $\frac{1}{8}$.

19. If ${}^n P_6 = 840$, ${}^n C_6 = 35$ then find the value of n .

20. A polygon has 44 diagonals, find the number of sides.

OR

How many triangles can be drawn through 8 points on a circle.

21. Two dice are thrown together. Find the probability that the sum of two numbers ~~is~~ more than 9 and less than 5 turn up.

22. In a quiz competition the average scores and standard deviations of group A and B are given below. Which group is more consistent in performances?

Group	Average	Standard deviation
A	15	3.6
B	20	3.4

23. The number of children born in 10 different hospitals during a month are 9, 12, 15, 18, 20, 22, 23, 24, 26 and 31. Calculate the standard deviation.

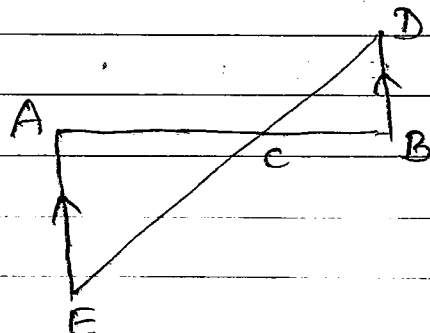
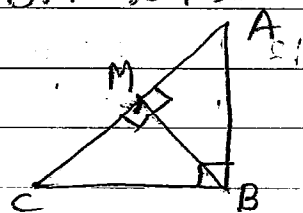
24. Solve $p = 5 - 2p^2$ by using formula

25. In $\triangle ABC$ if $\angle ABC = 90^\circ$, $BM \perp AC$, $BM = x + 2$, $AM = x + 7$ and $CM = x$ find the value of x .

OR

In the given figure $AE \parallel DB$,
 $BC = 7\text{ cm}$, $BD = 5\text{ cm}$, $DC = 4\text{ cm}$.

If $CE = 12\text{ cm}$, find AE and AC .



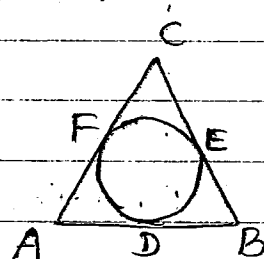
26. In $\triangle ABC$, $CD \perp AB$, $CA = 2AD$ and $BD = 3AD$.
Prove that $\angle BCA = 90^\circ$.

27. The ~~angles~~^{sides} of a right angled triangle are in AP.
Prove that the ratio of sides is $3:4:5$

28. Find the co-ordinates of mid-point of the line joining the points are $(-3, 10)$ and $(6, -8)$.

29. Find the equation of a line having angle of inclination 45° and y-intercept 2.

30. In $\triangle ABC$, $AB = 12\text{ cm}$, $BC = 8\text{ cm}$ and $AC = 10\text{ cm}$. Find AF , BD and CE .



Three marks questions.

31. If $x = 2 + \sqrt{3}$ find the value of $x^2 + \frac{1}{x^2}$

32. Divide $p(x) = x^3 + 4x + 4$ by $g(x) = x + 2$ and verify using division algorithm.

OR.

Verify whether $g(x) = x + 2$ is a factor of $p(x) = x^3 - 3x^2 + 6x - 20$ using factor theorem.

33. A dealer sells an article for Rs. 24 and gains as much percent as the cost price of the article. Find the cost price of the article.

OR.

The altitude of a triangle is 6 cm less than its base, if its area is 108 cm^2 , then find its base and altitude.

34. From a point 50 cm above the ground the angle of elevation of a cloud is 30° and the angle of depression of its reflection is 60° . Find the height of the cloud above the ground.

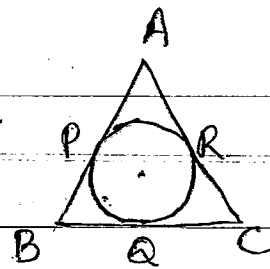
OR.

Prove that $\frac{1 - \tan^2 A}{1 + \tan^2 A} = 1 - 2 \sin^2 A$

35. A pair of perpendicular tangents are drawn to a circle from an external point. Prove that length of each tangent is equal to the radius of the circle.

OR.

In the figure, if $AB = AC$
 prove that $BQ = QC$.



36. A circus tent is cylindrical upto height of 3m and conical above it. If the diameter of the base is 105m and the slant height of the conical part is 53m, find the total cost of canvas used to make the tent if the cost of the canvas per sq.m is Rs. 10 per sq. m.

Four marks questions.

37. Population of a town is 2 lakhs. For every 5 years, it increases 3 times as per census. If it continues in the same manner, find the population of that town after 30 years.

OR

Number of fishes in a pond is 500. Every year it increases by 100. In how many years the sum of the fishes will be 50,000?

38. Draw the graph of $y = x^2$ and find the value of $\sqrt{5}$ by using it.

39. Prove that the areas of similar triangles are proportional to the squares of their corresponding sides.

40. Construct a transverse common tangent to two circles of radii 4cm and 2cm whose centres are 10cm apart. Measure and verify the length of the transverse common tangent.

Choice for question no. 36.

Calculate the area of the field shown in the diagram below (measurements are in metres)

