BELTHANGADY TALUK MATHS TEACHERS WORKSHOP

MINIMUM STUDY LEVEL QUESTION PAPER

Time: 2hour **SUBJECT: MATHEMATICS** **TOTAL: 50**

I. Choose the best alternative from following options **1 x 7 = 7**

1) The formula to find Harmonic Mean
   (A) $\frac{a+b}{2ab}$ (B) $\frac{2a+b}{a+b}$ (C) $\frac{2ab}{a+b}$ (D) $\frac{ab}{2(a+b)}$
2) The value of $^{100}C_{100}$ is
   (A) 0 (B) 100 (C) 1 (D) 100!
3) If the probability of winning a game is 0.3, what is the probability of losing it?
   (A) 0.3 (B) 1 (C) 0.7 (D) None
4) The formula to find coefficient of Variation is
   (A) $\frac{\sigma}{\bar{X}}$ x100 (B $\frac{\bar{X}}{\sigma}$ x 100 (C) $\frac{\sigma}{\bar{X}.100}$ (D) $\frac{\sigma.\bar{X}}{100}$
5) Find the slop of the line whose inclination is 60^0
   (A) 0 (B) $\frac{1}{\sqrt{3}}$ (C) 1 (D) $\sqrt{3}$
6) If $\sin x = \frac{3}{5}$, then $cosec\, x$ = -----
   (A) $\frac{3}{5}$ (B) $\frac{5}{3}$ (C) $\frac{1}{5}$ (D) $\frac{1}{3}$
7) If $f(x) = 2x^3 + 3x^2 - 11x + 6$ then the value of f(1) is
   (A) 1 (B) 22 (C) 0 (D) 6

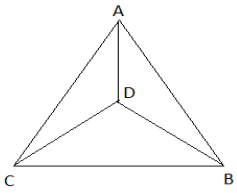
II. Answer the following **1 x 5 = 5**

8) Express 6762 as a product of prime factors
9) If A = {2, 3, 5, 7, 11}, B = {5, 7, 9, 11} then find B – A.
10) In ΔABC If DE||BC, AD = 5.7cm, BD = 9.5cm, EC = 6cm find AE.
11) Two circles of radii 4cm and 3 cm touch each other externally. Find the distance between their centers.
12) Find the volume of a sphere of radius 7 cm.

III. Answer the following **2x 10 = 20**

13) Construct a pair of tangents to a circle of radii 5 cm, and the angle between them is 40^0
14) Rationalize the denominator and simplify $\frac{3\sqrt{5}}{\sqrt{6}+\sqrt{3}}$
15) Find the product of $\sqrt[3]{5} \times \sqrt[4]{4}$
16) If U = { 1, 2, 3, 4, 5, 6, 7, 8, 9 }, A = { 2, 4, 6, 8}, B = {1, 3, 5, 8 } Prove that $(A \cap B)^1 = A^1 \cup B^1$
17) How many ways can 6 women draw water from 6 wells, if no well remain unused?
18) Solve by using the formula $8x^2 = x + 2$
19) If $\tan A = \frac{3}{4}$, Find $\sin\theta$ and $\cos\theta$.
20) Find the coordinates of the midpoint of the line segments joining the points (2, 3) and (4, 7)

21) Verify Euler's formula for the given graph



OR

Verify Euler's formula for Tetrahedron.

22) Sketch out the field to the following notes from the field book

	To D	
80to E	150 100 80 30	70 to C 40 to B
	From A	

IV. Answer the following **3 x 2= 6**

23) Calculate the standard deviation of the following data

X	35	40	45	50	55
f	6	8	12	5	9

24) prove that "If two circles touch each other, the centers and the point of contact Collinear"

V. Answer the following **4 x 3= 12**

25) Draw direct common tangents to two circles of radii 5cm and 2cm having their Centers 8cm apart and measure their lengths.

26) Draw the graph of $y = x^2 - x - 2$.

27) Prove that in a right angled triangle, the square on the hypotenuse is equal to the sum Of the squares on the other two sides.