ASSIGNMENT 7

EE24BTECH11011 - PRANAY

A. ***Q.1 to Q.5 carry one mark each***

1) "The dress _____ her so well that they all immediately _____ her on her appearance." The words that best fill the blanks in the above sentence are
   a) complemented, complemented
   b) complimented, complemented
   c) complimented, complimented
   d) complemented, complimented

2) "The judge's standing in the legal community, though shaken by false allegations of wrongdoing, remained _____."
   The word that best fills the blank in the above sentence is

   a) undiminished b) damaged c) illegal d) uncertain

3) Find the missing group of letters in the following series :
   BC, FGH, LMNO, _____

   a) UVWXY b) TUVWX c) STUVW d) RSTUV

4) The perimeters of a circle, a square and an equilateral triangle are equal. Which one of the following statements is true?
   a) The circle has the largest area.
   b) The square has the largest area.
   c) The equilateral triangle has the largest area.
   d) All the three shapes have the same area.

5) The value of the expression $\frac{1}{1+\log_u vw} + \frac{1}{1+\log_v uw} + \frac{1}{1+\log_w uv}$ is _____

   a) -1 b) 0 c) 1 d) 3

B. ***Q. 6 - Q. 10 carry two marks each.***

6) Forty students watched films A, B and C over a week. Each student watched either only one film or all three. Thirteen students watched film A, sixteen students watched film B and nineteen students watched film C. How many students watched all three films?

   a) 0 b) 2 c) 4 d) 8

7) A wire would enclose an area of $1936m^2$, if it is bent into a square. The wire is cut into two pieces. The longer piece is thrice as long as the shorter piece. The long and the short pieces are bent into a square and a circle, respectively. Which of the following choices is closest to the sum of the areas enclosed by the two pieces in square meters?

a) 1096 b) 1111 c) 1243 d) 2486

8) A contract is to be completed in 52 days and 125 identical robots were employed, each operational for 7 hours a day. After 39 days, five-seventh of the work was completed. How many additional robots would be required to complete the work on time, if each robot is now operational for 8 hours a day?

a) 50 b) 89 c) 146 d) 175

9) A house has a number which needs to be identified. The following three statements are given that can help in identifying the house number.
   i. If the house number is a multiple of 3, then it is a number from 50 to 59.
   ii. If the house number is NOT a multiple of 4, then it is a number from 60 to 69.
   iii. If the house number is NOT a multiple of 6, then it is a number from 70 to 79.

   What is the house number?

a) 54 b) 65 c) 66 d) 76

10) An unbiased coin is tossed six times in a row and four different such trials are conducted. One trial implies six tosses of the coin. If H stands for head and T stands for tail, the following are the observations from the four trials: (1) HTHTHT (2)TTHHHT (3) HTTHHT (4) HHHT__ __
    Which statement describing the last two coin tosses of the fourth trial has the highest probability of being correct?
    a) Two T will occur.
    b) One H and one T will occur.
    c) Two H will occur.
    d) One H will be followed by one T.

C. *Q. 1 - Q. 25 carry one mark each*

1) Let $\mathbf{a}, \mathbf{b}$ be two distinct vectors that are not parallel. The vector $\mathbf{c} = \mathbf{a} \times \mathbf{b}$ is
   a) zero
   b) orthogonal to $\mathbf{a}$ alone.
   c) orthogonal to $\mathbf{a} + \mathbf{b}$
   d) orthogonal to $\mathbf{b}$ alone.
2) Consider the function $f(x, y) = \frac{x^2}{2} + \frac{y^2}{3} - 5$. All the roots of this function
   a) form a finite set of points.
   b) lie on an elliptical curve.
   c) lie on the surface of a sphere.
   d) lie on a hyperbolic curve
3) Consider a vector field given by $x\hat{i} + y\hat{j} + z\hat{k}$. This vector field is
   a) divergence-free and curl-free.
   b) curl-free but not divergence-free.
   c) divergence-free but not curl-free.
   d) neither divergence-free nor curl-free.