2024-January
Session-31-01-2024-shift-1-16-30

EE24BTECH11038 - MALAKALA BALA SUBRAHMANYA ARAVIND

16) Two marbels are drawn in succession from a box containing 10 red, 30 white, 20 blue and 15 orange marbles, with replacement being made after each drawing. Then the probability, that first drawn marble is red and second drawn marble is white, is
   a) $\frac{2}{25}$
   b) $\frac{4}{25}$
   c) $\frac{2}{3}$
   d) $\frac{4}{75}$

17) Let $g(x)$ is a linear function and

$$f(x) = \begin{cases} g(x), & x \le 0 \\ \left(\frac{1+x}{2+x}\right)^{\frac{1}{x}} & x > 0 \end{cases}$$

is continuous at x=0 then if $f'(1) = f(-1)$ then the value of $g(3)$ is
   a) $\frac{1}{3}\log_e \frac{4}{9e^{\frac{1}{3}}}$
   b) $\frac{1}{3}\log_e\left(\frac{4}{9}\right) + 1$
   c) $\log_e\left(\frac{4}{9}\right) - 1$
   d) $\log_e \frac{4}{9e^{\frac{1}{3}}}$

18) if $f(x) = \begin{vmatrix} x^3 & 2x^2+1 & 1+3x \\ 3x^2+2 & 2x & x^3+6 \\ x^3-x & 4 & x^2-2 \end{vmatrix}$ for all $x \in \mathbf{R}$, then $2f(0) + f'(0)$ is equal to
   a) 48
   b) 24
   c) 42
   d) 18

19) Three rotten apples are accidently mixed with fifteen good apples. Assuming the random variable x to be the number of rotten apples in a draw of two apples, the variance of x is
   a) $\frac{37}{153}$

b) $\frac{57}{153}$

c) $\frac{47}{153}$

d) $\frac{40}{153}$

20) Let S be the set of positive integral values of a for which $\frac{ax^2+2(a+1)x+9a+4}{x^2-8x+32} < 0, \forall x \in \mathbf{R}$ then the number of elements in S

a) 1
b) 0
c) ∞
d) 3