02-09-2020 shift-1-16-25

EE24BTECH11060 - Sruthi Bijili

16) Let $\alpha > 0, \beta > 0$ be such that $\alpha^3 + \beta^3 = 4$.If the maximum value of the term independent of x in the binomial expansion of $\left(\alpha x^{\frac{1}{9}} + \beta x^{\frac{-1}{6}}\right)$ is $10k$,then k equals to:
(2020-4Marks)

a) 176
b) 336
c) 352
d) 84

17) Let S be the set of all $\lambda \in R$ for which the system of linear equations
$2x - y + 2z = 2$
$x - 2y + \lambda z = -4$
$x + \lambda y + z = 4$ has no solution. Then the set S
(2020-4Marks)

a) is an empty set
b) is a singleton
c) contains more than two elements.
d) contains exactly two elements.

18) Let $X=\{x \in N : 1 \le x \le 17\}$ and $Y=\{ax + b : x \in Xanda, b \in R, a>0\}$.If mean and variance of elements of Y are 17 and 216 respectively then a+b is equal to:
(2020-4Marks)

a) 27
b) 7
c) -7
d) 9

19) Let $y=y(x)$ be the solution of the differential equation, $\frac{2+\sin x}{(y+1)\left(\frac{dy}{dx}\right)} = -\cos x$, $y>0, y(0)=1$.If $y(\pi)=a$,and $\left(\frac{dy}{dx}\right)$at $x = \pi$ is b, then the ordered pair (a, b) is equal to:
(2020-4 Marks)

a) $\left(2, \frac{2}{3}\right)$
b) $(1, 1)$
c) $(2, 1)$
d) $(1, -1)$

20) The plane passing through the points $(1, 2, 1)$, $(2, 1, 2)$ and parallel to the line, $2x = 3y$, $z = 1$ also passes through the point:
(2020-4 Marks)

a) $(0, -6, 2)$
b) $(0, 6, -2)$
c) $(-2, 0, 1)$
d) $(2, 0, -1)$

21) The number of integral values of k for which the line, $3x + 4y = k$ intersects the circle, $x^2 + y^2 - 2x - 4y + 4=0$ at two distinct points is
(2020- Marks)

22) Let $\mathbf{a}, \mathbf{b}$ and $\mathbf{c}$ be three unit vectors such that $|a - b|^2 + |a - c|^2 = 8$.Then $|a + 2b|^2 + |a + 2c|^2$ is equal to:
(2020-4Marks)

23) If the letters of the word MOTHER be permuted and all the words so formed be listed as in a dictionary, then the position of the word MOTHER is …
(2020-4 Marks)

24) If $\lim_{x\to 1} \frac{x+x^2+x^3+...x^n-n}{x-1}=820$ $n \in N$, then the value of n is equal to:
(2020-4 Marks)

25) The integral $\int_0^2 ||x - 1| - x|\, dx$ is equal to:
(2020-4Marks)