ALLIANCE UNIVERSITY
Private University established in Karnataka State by Act No.34 of year 2010.
Recognized by the University Grants Commission (UGC), New Delhi

Alliance College of Engineering and Design

Bachelor of Technology [Batch: 2022-26]

Semester –IV

Critical Questions (Fast Learners), AI/ML- F

Subject Code & Title: 4BS 1409 Probability and Statistics

Q 1 The probability density function of a random variable x is zero except at x =0, 1, 2 and $p(0) = 3\alpha^3$, $p(1) = 4\alpha - 10\alpha^2$, $p(2) = 5\alpha - 1$. Find (i) α , (ii) $p(0 < x \leq 2)$

Q 2 The length of time (in minutes) a lady speak on the telephone is found to be random phenomenon with p.d.f as

$f(x) = A e^{\frac{-x}{5}}, x \geq 0$

$= 0$, otherwise.

Find A and the probabilities that she will speak more than 10 minutes, less than 5 minutes. and between 5 and 10 minutes.

Q 3 Find the constant c such that the function

$$f(x) = \begin{cases} cx^2 & 0 < x < 3 \\ 0 & otherwise \end{cases}$$

Q 4 The daily consumption of electric power (in millions of kwh) is a random variable X with p.d.f.

$f(x) = k\,x\,e^{\frac{-x}{3}}$ for $x > 0$

$= 0$ elsewhere

Find the value of k and the probability that on a given day the electric consumption is more than the expected electric consumption.

Q 5 A continuous random variable X has p.d.f. f(x) given by

$f(x) = 2ax + b$ for $0 \leq x < 2$,

$= 0$ otherwise.

If the mean of the distribution is 3, find the constants a and b.