NEIL GOGTE INSTITUTE OF TECHNOLOGY

CONTINUOUS INTERNAL EVALUATION (CIE) – II

B.E. CSE (AI&ML) - III Semester Examination, Feb-2022

Sub: Mathematics-III **Time: 1 hour** **Max.Marks: 20**

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory consisting of objective and short answer questions which carries 6 marks and answer all questions from part A in one place.
3. Answer any two questions from part B. Each question carries 7 marks and may have a, b as sub-Questions.

PART - A (6 marks)

1.(a) State the Bayes theorem (1 marks)
(b)Define Rectangular distribution. (1 marks)
(c)Define types KURTOSIS. (1 marks)
(d)List the properties of probability distribution function (1 marks)
(e)Write about X-chart and R-chart (1 marks)
(f)Find the four moments for the set of numbers 2,4,6,8. (1 marks)

PART-B (14 marks)

2. (a) For the discrete probability distribution (3 marks)

X	0	1	2	3	4	5	6
P(X)	0	2K	2K	3K	K^2	$2K^2$	$7K^2+K$

Find (i) K (ii) Mean (iii) Variance

(b)A sample of 4 items is selected at a random from a box containing 12 items of which 5 are defective. Find (i) discrete probability distribution (ii) E(X) (4 marks)

3. (a) The Probability distribution of a random variable X is given below

X	-2	-1	0	1	2
P(X)	0.2	0.1	0.3	0.3	0.1

Find (i) E(X) (ii) V(X) (iii) E (2X-3) (iv) V (2X-3) (4 marks)

(b) A sample of 4 items is selected at random from a box containing 12 items of which 5 are Defective, Find the Expected number E of defective items. (3 marks)

4. (a) If the probability of a bad reaction from a certain injection is 0.001 , what is the chance that out Of 2000 individuals more than two will get a bad reaction? (3 marks)
(b) A Continuous random variable has the probability density function

$f(x) = k \times e^{-\lambda x}$ for $x \geq 0$; $\lambda \geq o$ and $f(x) = 0$ Otherwise, then Find (i) K (ii) Mean (iii) Variance (4 marks)

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