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SEAT No. :

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T.Y.B.Com.

355 (F) : BUSINESS STATISTICS - II

(2019 CBCS Pattern) (Semester - V)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of statistical tables and calculator is allowed.***

Q1) Attempt each of the following. **[1each]**

a) Fill in the blanks (any 5).

i) Number of distinct ways of arranging 5 persons for a photograph in a row is_____.

ii) Let X $\sim$ Bernoulli (p = 0.4) then variance of X is_____.

iii) Re order level = minimum levet + _____.

iv) If event A and B are independent then P(A/B)=_____.

v) Economic order quantity is the tool for controlling_____.

vi) X $\sim$ poisson with mean 1.2 then variance of x is_____.

vii) If A & B are independent r.v P (A) = 0.5 & P (B)= 0.6 then P (A$\cap$B)=_____.

b) State whether following statement is true or false. **[1 each]**

i) A discrete random variable takes uncountably infinite values.

ii) Set up cost incurred each time an order is placed.

iii) If $\sim$ event A and B are not independent then

$$P(A/B)=\frac{P(A\cap B)}{P(B)}, P(B)>0.$$

iv) If X $\sim$ B (n, p) then mean of X is n p.

v) Let X $\sim$ P (λ = 2.4) then value of P (X = 0) = $e^{-2.4}$.

P.T.O.

Q2) Write a short note on the following (any two). **[5 each]**

a) Discrete random variable.

b) Limitations of classical defination of probability.

c) Assumptions of EOQ model when shortages are allowed.

d) Poisson distribution.

Q3) A) Attempt the following.

a) Define the following. **[4]**

i) Sample Space.

ii) Mutually exclusive event.

iii) Relative compliment of event A.

iv) event.

b) The probability of defective bolt is 0.1. Let X denotes the number of defective bolts in a box of 20 bolts. Find the probability of the defective bolts will be. **[4]**

i) at least two.

ii) at most three.

B) Attempt the following.

a) Define Economic order quantity and Recorder level. **[4]**

b) Define conditional probability with illustration. **[3]**

Q4) A) Attempt the following.

a) A dealer supplies the following information with respect to a product. **[4]**

Annual demand - 1000

Ordering cost - 10 Rs. per order

Price per unit - 20 Rs.

Inventory carrying cost - 20%

Back - order cost - 25%

Determine:

i) EOQ.

ii) Optimal number of orders.

b) Define Binomial distribution with parameter n & p If $X \backsim B$ $(n = 5, p = 0.5)$ then find its mean & variance. **[4]**

B) Attempt the following.

a) The p.m.f of a discrete random variable X is given by.

X	−1	0	1
p (X = *x*)	0.25	0.5	0.25

Find variance of X. **[3]**

b) Let (X, Y) denotes the bivariate discrete random variable with joint p.m.f given.

X ↓ \ Y →	−1	0	1
−1	$\frac{1}{12}$	$\frac{3}{12}$	$\frac{2}{12}$
1	$\frac{3}{12}$	$\frac{2}{12}$	$\frac{1}{12}$

Find marginal distribution of Y and hence E (Y). **[4]**

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