Total No. of Questions : 4]

SEAT No. :

PD935

[Total No. of Pages : 3

[6439]-211

T.Y. B.Com.

355 - F : BUSINESS STATISTICS - II

(2019 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 calculator and statistical table is allowed.***
4) ***Symbols have their usual meanings.***

Q1) a) Fill in the blanks (Any 5) : **[1 each]**

i) No. of different ways of arranging 4 boys (A, B, C and D) for a photograph in a row is _____.

ii) No. of ways of selection of 3 balls from 5 balls is _____.

iii) A true die is tossed two times and outcomes are noted then the total number of elements in the sample space are _____.

iv) If two events A and B defined on the sample space are independent with P(A) = 0.6 and P(B) = 0.3 then $P(A \cap B) =$ _____.

v) Re order level = minimum level + _____.

vi) Economic order quantity is the tool for controlling _____.

vii) The probability distribution of a random variable X is given by :

X	–2	0	2
P(X = *x*)	0.4	0.2	0.4

Then expected value of X, E(X) is _____.

P.T.O.

b) State whether following statements is true or false (Any 5) : **[1 each]**

i) Probability of an event always lies between 0 to 1.

ii) A discrete random variable takes only particular values.

iii) Probability of an impossible event is zero.

iv) If two events A and B defined on sample space are independent then conditional and unconditional probabilities are same.

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

vi) If $X \to P(\lambda = 3)$ then value of $P(X = 0) = e^{-3}$.

vii) If X $\to$ Bernoullic (P = 0.8) then mean = variance = 0.8.

Q2) Write a short notes on the following (Any 2) : **[5 each]**

a) Define classical defination of probability. What are its assumption and limitations.

b) Explain the terms : random variables (r.v.) discrete r.v., probability mass function (p.m.f.)

c) Explain the terms : Bernoulli trials, Bernoulli distribution and its mean and variance.

d) Assumptions of EOQ model when shortages are allowed.

Q3) a) A discrete r.v. X has the following probability distribution

X	–1	0	1	2
P(X = x)	k	$3k$	$2k$	k

Then find the value of constant k and its mean value E(X). **[4]**

b) The joint probability distribution of two dimensional r.v. (X, Y) is given by

x / y	–1	1
0	0.1	0.4
1	0.3	0.2

Check whether X and Y are independent? **[4]**

c) Define Partition of a sample space and state Baye's theorem. **[4]**

d) Define Economic order quantity and Recorder level. **[3]**

Q4) 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 - EOQ, Optimal no. of orders.

b) If $X \to B(n, P)$ then **[4]**

i) For mean = 6, Var(X) = 4.2 find *n* and P

ii) For mean = 6, P = 0.6 find *n* and Var(X)

iii) For n = 25, mean = 10 find P and Var(X)

c) For a joint probability distribution of (X, Y) **[4]**

x / y	0	1	2
1	0.1	0.1	0.2
2	0.2	0.3	0.1

Obtain marginal probability distribution of X and Y. Also find P(X = Y).

d) If $X \to P(\lambda)$ with P(X = 1) = 2P(X = 2) then find the value of parameter λ and hence mean of X. **[3]**