Total No. of Questions : 4]

SEAT No. :

P2961

[Total No. of Pages : 3

[5801]-511

T.Y. B.Com.

355(F) - BUSINESS STATISTICS - II

(CBCS) (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 statistical tables and calculator is allowed.***

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

a) Fill in the blanks (Any 5) :

i) Number of distinct ways of arranging 5 persons for a photograph in a row is -

ii) A die is tossed twice and outcomes are noted then the total number of elements in the sample space is ____

iii) If A is any event on Ω such that $P(A)=\frac{1}{4}$ then conditional probability of A given A' i.e $P(A|A')$ is _____

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

x	−1	0	1
P(X=x)	0.30	0.4	0.30

then expected value of X is ____

v) Let X follows *Bernoulli* (p = 0.4) then Variance of X is ____

vi) Let X follows *Poisson* (m = 2.4) then value of $P(X = 0)$ is _____

vii) Reorder level = Minimum level + _____

P.T.O.

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

i) Poisson distribution is used in a case of rare events.

ii) If events A and B are independent then $P(A|B) = P(A)$.

iii) A discrete random variable takes uncountably infinite values.

iv) Order of the arrangement is important in case of combination of r units from n.

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

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

a) Assumptions of EOQ model when shortages are allowed.

b) Classical and axiomatic definition of probability.

c) Discrete random variable.

d) Bernoulli trials and its relationship with binomial trials.

Q3) a) Attempt the following :

i) Let (X, Y) denotes the bivariate discrete random variables with joint p.m.f given by **[4]**

Y→ / X↓	−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 X and hence $E(X)$

ii) Define the following : **[4]**

I) Sample Space

II) Simultaneous occurrence of events

III) Complement of an Event.

IV) Occurrence of at least one of the events

b) i) Define Economic order quantity and Reorder level. **[4]**

ii) State Bayes Theorem. **[3]**

Q4) a) Attempt the following

i) How many distinct numbers can be formed by using digits 0, 1, 2, 3, 4, 5, 6 between 3000 and 5000 if each digit must not be repeated in any number? **[4]**

ii) Let (X, Y) denotes the bivariate discrete random variables with joint p.m.f given by **[4]**

Y→ / X↓	1	2
1	0.1	0.2
2	0.3	0.4

Check whether X and Y are independent?

b) i) The p.m.f. of a discrete random variable X is given by **[4]**

x	−1	0	1
P(X=x)	0.25	0.5	0.25

Find variance of X.

ii) State additive property of Poisson distribution. **[3]**

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