[6142]-511

T.Y. B.Com.

355 - F : BUSINESS STATISTICS - II

(2019 Pattern) (Semester - V)

Time : 2 ½Hours] *[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 3 boys for a photograph in a row is _____ .

ii) No. of ways of selection of 2 balls from 4 balls is _____ .

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

iv) If A is any event defined on the sample space such that $P(A) = \dfrac{1}{3}$ then conditional probability of A given A' $P(A/A') =$ _____ .

v) Expected value of a constant is _____ .

vi) Reorder level = minimum level + _____ .

b) State whether the following statements are true or false.(any five)

i) A discrete random variable (r.v.) takes only particular values.

ii) If two events A and B are independent then $P(A/B) = 0$.

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

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

v) For binomial distribution mean > variance.

vi) If a discrete r.v. $X \rightarrow$ Bernoulli $(P = 0.6)$ then mean = variance = 0.6.

P.T.O.

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

a)   Define classical definition of probability. What are its assumptions? State axioms of probability.

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

c)   Define Binomial distribution. State its p.m.f., state its mean, variance and standard-deviation (s.d.) state additive property of binomial distribution.

d)   Meaning and necessity of inventory control. Define deterministic inventory model.

Q3) a)   Attempt the following :

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

ii) State Baye's theorem.   **[3]**

b)   Attempt the following :

i)   The p.m.f. of a discrete r.v.x is given by

X	−2	−1	0	1	2
P(X = x)	0.3	0.2	0.2	0.1	0.2

Obtain variance of X.   **[4]**

ii) The joint p.m.f. of (x, y) is given by   **[4]**

x \ y	−1	1
−1	0.2	0.3
1	0.4	0.1

Check whether x and y are independent?

Q4) a) Attempt the following :

   i) For X → B(*n, p*) [4]

      I) If E(*x*) = 6, Var(*x*) = 4.2, then find *n* and *p*.

      II) If P = 0.6, E(*x*) = 6 then find *n* and Var(*x*).

      III) If *n* = 25, E(*x*) = 10 then find *p* and Var(*x*).

      IV) Is it possible to have E(*x*) = 3, Var(*x*) = 3?

   ii) For joint p.m.f. of (*x, y*) [4]

x \ *y*	−1	0	1
0	0.1	0.2	0.1
1	0.2	0.3	0.1

   Obtain marginal probability distributions of *x* and of *y*. Also obtain
   P(*x* = *y*).

 b) Attempt the following :

   i) Define the following :

      Sample space, event, simultaneous occurrence of two events A & B,
      occurrence of at least one of the two events A & B. [4]

   ii) The p.m.f. of a discrete r.v. X is [3]

X	−1	0	1	2	3
P(X = *x*)	0.1	0.2	0.3	0.2	0.2

   Obtain variance of X.

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