Total No. of Questions : 4]

SEAT No. :

PE1087

[Total No. of Pages : 3

[6525]-511

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.***

Q1) A) Fill in the Blanks (Any Five). **[1 each]**

a) Number of distinct ways of arranging 2 students from 3 students (A, B & C) for a photograph in a row is _____.

b) Number of ways of selection of 2 balls from 4 different colour balls is _____.

c) The probability distribution of a discrete random variable X is given by.

X	–1	0	1
P(X=*x*)	0.25	0.50	0.25

Then expected value of X is _____.

d) If mean and variance of a random variable (r.v.) X are respectively 10 and 4 then mean and variance of r.v. $V=\left(\frac{X-10}{2}\right)$ are respectively equals to _____.

e) A Bernoulli trial is a random experiment which has only _____ outcomes.

f) If $X \rightarrow B(n,p)$ with $E(X)=5/3$ and $Var(X)=\frac{10}{9}$ then the value of 9 is _____.

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

P.T.O.

SPPUQuestionPapers.com

B) State whether the following statements are true or false (any five). **[1 each]**

a) It is impossible to define an impossible event.

b) Classical definition of probability assumes that all outcomes are equally likely.

c) A discrete random variable cannot take negative values.

d) Expected value of a constant is zero.

e) For Bernoulli distribution mean is less than variance.

f) For poisson distribution mean=variance.

g) Set up cost incurred each time an order is replaced.

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

a) Define classical definition of probability. What are the assumptions and limitations of classical definition of probability.

b) Define mathematical expectation, variance and standard-deviation of a discrete random variable X.

c) Define poisson distribution. State its p.m.f., mean, variance and standard deviation. State additive property of poisson distribution.

d) Explain meaning and necessity of inventory control. Define deterministic inventory model.

Q3) a) If A and B are any two events defined on a sample space Ω with $P(A)=\frac{1}{4}$, $P(B/A)=\frac{1}{2}$, $P(A/B)=\frac{1}{4}$, then show that A and B are independent and $P(A'/B')=\frac{3}{4}$. **[4]**

b) A unbiased coin is tossed 3 times. A person receives Rs. X^2, if he gets X number of tails in all. Obtain his expected gain. **[4]**

c) If $X \rightarrow B(2, p)$ and $P(X \geq 1)=\frac{5}{9}$, then find the value P hence state the values of its mean and variance. **[4]**

d) For $X \rightarrow P(m)$ with $P(X=2)=P(X=3)$. Find $P(X \geq 1)$. **[3]**

SPPUQuestionPapers.com

Q4) a) A dealer supplies the following information with respect to a product.

Annual demand-1000, ordering cost-Rs.10 per order

Price per unit-Rs. 20,

Inventory carrying cost- 20%

Back-order cost-25%

Determine- EOQ, optimal no. of orders. **[4]**

b) For $X \rightarrow B(n, p)$ **[4]**

i) If P=0.6, E(X)=6, then find n and Var(X)

ii) If n=25, E(X)=10, then find P and Var(X).

c) If a fair coin is tossed thrice and a r.v.X : No. of heads, r.v.Y: No. of tails, then obtain the joint probability distribution of (X,Y). Also obtain the marginal probability distributions of X and Y. **[4]**

d) Let x and y be two discrete r.vs. having joint p.m.f. **[3]**

$$P(x, y) = kxy; \quad x = 1,2,3. \quad y = 1,2,3.$$

Find the value of constant k.



SPPUQuestionPapers.com