Total No. of Questions : 4]

SEAT No. :

PB1363

[Total No. of Pages : 3

[6224]-523
T.Y.B.Com.
356-F: BUSINESS STATISTICS-III
(2019 Pattern) (CBCS) (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 table and calculator is allowed.***

Q1) a) Fill in the blanks (Any five) **[5]**

i) P-chart is _____ types control chart.

ii) C-chart is used to control number of _____.

iii) In game theory maximin # _____, then there does not exist saddle point.

iv) In replacement problem, maintenance cost is always_____.

v) Electric fluctation is belonging to _____ causes

vi) We use _____ criteria to average the elements of payoff of corresponding strategy.

b) State whether each of the following statement is true or false (any five)**[5]**

i) If the value of the game is greater then zero then game is called as fair game.

ii) P-chart is used to control proportion of defectives.

iii) Control charts are applying on continuous production process.

iv) In replacement problem we can use value of money which remain the same during the period.

v) If quantity is hand is equal to demand then there does not exists opportunity loss.

vi) In two person zero-sum game. value of the game is always non-negative.

P.T.O.

Q2) Attempt any two of the following: **[5 each]**

a) Solve the following game:

Player B

$$\begin{array}{cc} & \begin{matrix} B_1 & B_2 & B_3 \end{matrix} \\ \text{PlayerA} & \begin{bmatrix} 3 & 8 & -4 \\ 10 & 11 & 13 \\ 12 & 14 & 8 \end{bmatrix} \begin{matrix} A_1 \\ A_2 \\ A_3 \end{matrix} \end{array}$$

b) Explain the construction of P charts for number of defectives.

c) State and explain dominance principle in game theory.

d) The number of defects in 10 different carpets are as follows:

1, 0, 2, 3, 1, 2, 1, 3, 0, 0.

Construct C-chart. Comment.

Q3) a) The maintenance cost and resale value per year of a machine whose purchase price is Rs. 15,000 is given below. **[8]**

Year	1	2	3	4	5	6	7	8
Maintenance cost (Rs.)	600	800	1,050	1,400	2,100	3,500	5,000	6,800
Resale value (Rs.)	12,000	9,500	7,500	5,700	4,200	3,900	2,900	2,000

When should be machine replaced?

b) Write pay-off matrix for the given situation. The demand for cake in the bakery shop may be 25, 26, 27 and 28 with respective probabilities 0.1, 0.3, 0.5 and 0.1. making cost and selling price of one cake is Rs. 8 and Rs. 10 respectively. Balance cake is treated as waste. How much cake should be make using EOL criteria? **[7]**

Q4) a) The Following data on the basis of fuses sample of 5 being taken every hour:

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12
Mean	69.4	63.4	57	64	57.4	82	85	33.4	46	112.4	93.6	95.6
Range	45	48	62	48	36	81	78	42	69	84	48	75

$(n = 5, A_2 = 0.577, D_3 = 0, D4 = 2.115)$

Draw control charts for mean and range. Also comment on whether the process is under control? **[8]**

b) From the following pay-off table (of profit) determine optimal strategy using maximin, maxi max, La Place and Hurwicz criterian. (Take α=0.8)**[7]**

Demand $\rightarrow$ Stock $\downarrow$	A_1	A_2	A_3	A_4
S_1	14	9	10	5
S_2	11	10	8	7
S_3	9	10	10	11