

Total No. of Questions : 4]

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[6032]-523

T.Y.B.Com

(356(F)) : BUSINESS STATISTICS-III

(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) a) Fill in the blanks. (any five) [5]

- i) The number of defects can be controlled using \_\_\_\_\_ chart.
- ii) EOL stands for \_\_\_\_\_ opportunity loss.
- iii) In game theory saddle point does not exist if minimax \_\_\_\_\_ maximin.
- iv) A process is said to be under statistical control if it operates with \_\_\_\_\_ causes.
- v) In variable control charts first we always draw \_\_\_\_\_ control chart.
- vi) P chart is \_\_\_\_\_ type control chart.

b) State whether each of the following statement given below is true or false: [5]

- i) Upper control limit of  $\bar{x}$  in case of  $\bar{x}$  and R - chart is  $\bar{x} + \frac{R}{d_2\sqrt{n}}$ .
- ii) Value of game is always negative.
- iii) R chart is quantitative type control chart.
- iv) Control chart does not apply on continuous production process.
- v) If quantity in hand is more than demand then there exist opportunity loss.

P.T.O.

Q2) Attempt any two of the following.

- a) Explain the following terms
- i) Expected monetary value [1]
  - ii) Sequencing problem [3]
  - iii) Capability index [1]
- b) i) Give an example of each a) assignable causes b) change causes [1]
- ii) State Laplace criterion in game theory. [1]
  - iii) Obtain the saddle point for the following game. [2]

$$\begin{matrix} & \text{Company A} \\ \text{Company B} & \begin{bmatrix} 18 & 16 \\ -17 & -11 \end{bmatrix} \end{matrix}$$

- iv) Explain pure and mix strategies in game theory. [1]
- c) Solve the following game : [5]

$$\begin{matrix} & \text{Player B} \\ & B_1 & B_2 & B_3 \\ \text{Player A} & \begin{matrix} A_1 \\ A_2 \\ A_3 \end{matrix} \begin{bmatrix} 8 & 8 & 7 \\ 6 & 7 & 2 \\ 5 & 6 & 1 \end{bmatrix} \end{matrix}$$

- d) Number of defects in 8 different pins manufactured are as follows : [5]  
0, 0, 1, 1, 3, 2, 0, 2. construct R chart.

Q3) a) The maintenance cost and resale value per year of a machine whose purchase price is Rs. 10000 is given below. [8]

Year	1	2	3	4	5	6	7	8
Maintenance cost (in Rs)	1000	1600	2000	2500	3000	4000	5100	7000
Resale value (in Rs.)	6000	3500	1600	800	700	500	400	400

When should the machine be replaced?

- b) From the following pay off (profit), table, determine the optimal strategy using maximax, minimax, EMV criterion. [7]

Actions	Payoffs conditional on Events			
	A	B	C	D
$S_1$	8	0	-10	6
$S_2$	-4	12	-18	-2
$S_3$	14	6	0	8

- Q4) a) Write a note on sequencing problem. [5]  
b) Explain graphical method to solve  $2 \times 2$  game. [5]  
c) From the following find payoff table. Demand of an item can be 0 to 4 units per day. purchase price per unit is Rs 30. selling price per unit is Rs.40 unsold stock is complete loss. [5]

