

S.D.E.

M.C.A. SEM - III : SUMMER - 2018
SUBJECT : DECISION TECHNOLOGIES

Day : **Thursday**
Date : **07/06/2018**

Time : **10.00 A.M. TO 1.00 P.M.**
Max. Marks : 80

S-2018-4617

N.B.:

- 1) Attempt **ANY THREE** questions from Section – I and attempt **ANY TWO** questions from Section – II.
- 2) Answers to both the sections should be written in **SEPARATE** answer books.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 a) Draw histogram from the following data: [08]

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50-60	60-70
No. of students	17	27	56	43	40	47	66

b) What is Statistical Quality Control? Explain any one chart. [08]

Q.2 a) Solve the following equation by using Bisection method [08]
 $x^3 - x - 1 = 0$

b) What is inventory management? Explain any one technique of inventory management. [08]

Q.3 a) Explain various time series components. [08]

b) Find rank correlation coefficient from the following data: [08]

X	24	29	30	25	30	25	36	40
Y	54	37	29	38	42	24	39	32

Q.4 a) What is hypothesis? Explain the procedure of testing hypothesis. [08]

b) Customers arrive at a service station at the rate 25 per hour. They are served by the server at the rate 30 per hour. If the arrival pattern follows Poisson distribution and service follows exponential pattern, find [08]
i) queue length.
ii) probability of server being idle.

Q.5 Write short notes on **ANY FOUR** of the following: [16]

- a) M/M/I queueing model
- b) Applications of forecasting
- c) Simpson's 1/3rd rule
- d) Decision making under risk
- e) Vogel's Approximation Method

P.T.O.

SECTION – II

- Q.6** Solve the following L.P.P. by using Simplex Method: **[16]**
 Maximize $z = 10x + 15y$
 Subject to $11x + 5y \leq 2700$,
 $5x + 10y \leq 2000$,
 $x + 2y \leq 450$,
 $x, y \geq 0$.

- Q.7** Following table gives information of different activities and the time required **[16]**
 to complete the activities.

Activity	1 – 2	1 – 3	1 – 4	2 – 5	3 – 6	3 – 7	4 – 6	5 – 8	6 – 9	7 – 8	8 – 9
Time (months)	2	2	1	4	8	5	3	1	5	4	3

You are required to

- a) draw a network diagram.
 b) find critical path.
 c) find probability of completing the project in 8 months.
- Q.8** a) Solve the following assignment problem for minimum cost: **[08]**

		Machine			
		W	X	Y	Z
Job	A	17	23	27	31
	B	7	12	16	18
	C	9	14	16	21

- b) Find mean values of X and Y from the following regression equations. Also **[08]**
 find the regression coefficients.
 $2X - Y = 40$
 $7X + 2Y = 145$

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