S.D.E.

B.C.A. (2004 Course Sem- III : SUMMER - 2019

SUBJECT : COMPUTER ORIENTED DECISIONS MODELS

Day : Monday
Date : 20/05/2019

Time : 02.00 PM TO 05.00 PM
Max. Marks : 80

S-2019-4970

N.B.

1) Attempt any **FIVE** questions from Section – I any **TWO** questions from Section – II.
2) Figures to the right indicate **FULL** marks.
3) Answer to both the sections should be written in **SAME** Answer book.

SECTION – I

Q.1 Define Operations Research and explain briefly its applications. **(10)**

Q.2 Explain decision making process. Also explain types of decision models. **(10)**

Q.3 Explain Linear programming problem. Also give the applications of Linear Programming Problem. **(10)**

Q.4 Use graphical method to solve the following Linear Programming Problem. **(10)**

Maximize $Z = 5x_1 + 2x_2$

Subject to $2x_1 + 3x_2 \leq 150$

$3x_1 \leq 150$

$5x_2 \leq 200$

and $x_1, x_2 \geq 0$

Q.5 Solve the following transportation problem by **(10)**

i) North-West Corner rule **ii)** Least Cost method

Sources	**Destinations**			**Supply**
	D_1	**D_2**	**D_3**	
S_1	2	7	4	5
S_2	3	3	7	8
S_3	5	4	1	7
S_4	1	6	2	14
Demand	7	9	18	34

Q.6 Assign workers 1,2,3,4 to jobs A,B,C,D. Times taken by workers for different jobs are given in the matrix. **(10)**

Workers	Jobs			
	A	B	C	D
1	45	40	51	67
2	55	40	61	53
3	49	52	48	64
4	41	45	60	55

Q.7 Explain Monte Carlo method of simulation. **(10)**

P.T.O.

SECTION – II

Q.8 The data given below indicate the processing time of 5 jobs A, B, C, D, E on two machines M_1 and M_2 with sequence of operation as $M_1 \rightarrow M_2$ for all jobs. Apply Johnson's Algorithm. **(15)**

Machines	Processing Time for Jobs				
	A	B	C	D	E
M_1	4	13	7	12	6
M_2	3	15	5	6	11

Q.9 Use Simplex method to solve the following LPP **(15)**

Maximize $Z = 3x_1 + 5x_2 + 4x_3$

Subject to $2x_1 + 3x_2 \leq 8$

$2x_1 + 5x_3 \leq 10$

$3x_1 + 2x_2 + 4x_3 \leq 15$

$x_1, x_2, x_3 \geq 0$

Q.10 Explain CPM and PERT. All activities of a project are given below along with their inter-relationship. Draw the network for the same. **(15)**

Activity	A	B	C	D	E	F	G	H	I	J	K
Preceding Activity	-	A	B	C	D	E	F	F	F	G,H,I	H

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