SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with A+ Grade by NAAC)
Chromepet,Chennai — 600 044.
B.Sc. END SEMESTER EXAMINATION APRIL/NOV – 2021
SEMESTER - V

13UCSCE5A01 **&** UCS/CE/5A01- **Resource Management Techniques**

Total Duration	**: 3 Hrs**	**Total Marks**	**: 75**
MCQ	: 30 Mins	MCQ	: 15
Descriptive	: 2 Hrs.30 Mins	Descriptive	: 60

Section B

Answer any **SIX** questions (6 × 5 = 30 Marks)

1. Solve the following LPP by graphically.

$Max\ z = 8x_1 + 5x_2$

$subject\ to$

$2x_1 + x_2 \le 500$

$x_1 \le 150$

$x_2 \le 250$

$x_1, x_2 \ge 0$

2. Solve the following LPP by Big M method

$Maximize\ z = 3x_1 + 2x_2$

$subject\ to$

$2x_1 + x_2 \le 2$

$3x_1 + 4x_2 \ge 12$

$x_1, x_2 \ge 0$

3. Determine the initial basic feasible solution to the following transportation problem using row minima method.

	To				Availability
From	5	2	4	3	12
	4	8	1	6	15
	4	6	7	5	8
Demand	7	12	17	9	

4. A Salesman has to visit five cities A,B,C,D and E. The distance (in hundred miles) between the five cities is as follows:

$$\begin{array}{cc} & \begin{matrix} A & B & C & D & E \end{matrix} \\ \text{From} & \begin{pmatrix} \infty & 7 & 6 & 8 & 4 \\ 7 & \infty & 8 & 5 & 6 \\ 6 & 8 & \infty & 9 & 7 \\ 8 & 5 & 9 & \infty & 8 \\ 4 & 6 & 7 & 8 & \infty \end{pmatrix} \end{array} \begin{matrix} A \\ B \\ C \\ D \\ E \end{matrix}$$

To

Contd…

5. Find the sequence that minimizes the total elapsed time required to complete the following tasks on two machines

Job	A	B	C	D	E	F
Machine I	1	4	6	3	5	2
Machines II	3	6	8	8	1	5

6. Solve the 2 x 4 game problem graphically

$$\begin{matrix} & \text{Player B} \\ \text{Player A} & \begin{pmatrix} 1 & 3 & -3 & 7 \\ 2 & 5 & 4 & -6 \end{pmatrix} \end{matrix}$$

7. A project schedule has the following characteristics

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-10	9-10
Time (days)	6	2	2	2	7	6	5	9	2	3	6	8

(i). Construct a network diagram
(ii). Compute the earliest event time and latest event time.
(iii). Determine the critical path and total project duration.
(iv). Compute total float and free float for each activity.

8. Solve the following TP by using NWCR

	P	Q	R	S	Supply
A	6	4	1	5	14
B	8	9	2	7	16
C	4	3	6	2	5
Demand	6	10	15	4	35

Section C

Answer any **THREE** questions (3 × 10 = 30 Marks)

9. Solve the following LPP by Simplex Method

$Max\ Z = 3x_1 + 2x_2$

Subject to

$x_1 + x_2 \le 4$

$x_1 - x_2 \le 2$

$x_1, x_2 \ge 0$

Contd…

10. Evaluate the minimum transportation cost for the following TP

Destination						
Origin		P	Q	R	S	Supply
	A	11	13	17	14	250
	B	16	18	14	10	300
	C	21	24	13	10	400
	Demand	200	225	275	250	

11. Solve the 6 x 2 game problem graphically

$$\begin{pmatrix} 1 & -3 \\ 3 & 5 \\ -1 & 6 \\ 4 & 1 \\ 2 & 2 \\ -5 & 0 \end{pmatrix}$$

12. Draw the network and determine the critical path for the given data.

Jobs	1-2	1-3	2-4	3-4	3-5	4-5	4-6	5-6
Duration	6	5	10	3	4	6	2	9

Evaluate the total float, free float and independent float of each activity.

13. Following is the payoff matrix for player A

Player B

$$\text{Player A} \quad \begin{matrix} \\ A_1 \\ A_2 \\ A_3 \\ A_4 \end{matrix} \begin{matrix} B_1 & B_2 & B_3 & B_4 & B_5 \\ \end{matrix} \begin{pmatrix} 2 & 4 & 3 & 8 & 4 \\ 5 & 6 & 3 & 7 & 8 \\ 6 & 7 & 9 & 8 & 7 \\ 4 & 2 & 8 & 4 & 2 \end{pmatrix}$$

Using dominance property, obtain the optimum strategies for both the players and determine the value of the game.