B.C.A. DEGREE EXAMINATION,NOVEMBER 2018
III YEAR V SEMESTER
Core Elective - I
RESOURCES MANAGEMENT TECHNIQUE

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. State any two characteristics of O.R.
2. Define the term decision variables.
3. What do you mean unbounded problem?
4. Differentiate slack and surplus variable.
5. Write the role of pivot element in simplex method.
6. Write a dual theorem.
7. What is travelling salesman problem?
8. Give any two applications of assignment problem.
9. What is saddle point in Game theory?
10. What is game theory?
11. What is PERT and CPM?
12. Construct dual for

    Max $z = 6x_1 + 2x_2$

    Subject to $3x_1 + 4x_2 \leq 40$,

    $5x_1 + 2x_2 \leq 30$,

    $6x_1 - 3x_2 \leq 15$, $x_2 \leq 20$, $x_1, x_2 \geq 0$.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Explain the general methods for solving OR models.
14. Describe Simplex algorithm to solve an L.P.P
15. Solve the transportation problem which has cost structure as

	To			Availabilities
From	16	19	12	14
	22	13	19	16
	14	28	8	12
Requirements	10	15	17	

16. Obtain the optimal assignment from the following table

	1	2	3	4
A	160	130	175	190
B	135	120	130	160
C	140	110	125	170
D	50	50	80	80

17. Describe the optimal sequence algorithm for n jobs through 3 machines.
18. Explain maximum minimax principle.
19. There are 5 jobs, each of which must go through the two machines A and B in the order A-B. Processing times are given below.

Job	1	2	3	4	5
Machine A	10	2	18	6	20
Machine B	4	12	14	16	8

Determine the sequence for the 5 jobs.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Discuss about the methodology of operations research.
21. Use duality to solve the following L.P.P

Maximize : z= $2x_1 + x_2$ subject to the constraints: $x_1+2x_2 \leq 10$, $x_1+x_2 \leq 6$, $x_1 - x_2 \leq 2$, $x_1 - 2x_2 \leq 1$
$x_1, x_2 - \geq 0$.

22. Solve the following assignment problems.

	A	B	C	D
I	10	25	15	20
II	15	30	5	15
III	35	20	12	24
IV	17	25	24	20

23. Solve the following game by linear programming Tech.

	Player B		
Player A	1	−1	3
	3	5	−3
	6	2	−2

24. The following table gives the activities in a constructive project and the other relevant information.

Activity	1-2	1-3	2-3	2-4	3-4	4-5
Duration(days)	20	25	10	12	6	10

i) Draw the network for the project.

ii) Find the critical path and project duration.

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