ST. JOSEPH'S EVENING COLLEGE (AUTONOMOUS)

II SEMESTER BCA EXAMINATIONS - APRIL 2019

OPERATIONS RESEARCH

Duration: 2.5 Hours **Max. Marks: 70**

SECTION - A

I) Answer any SIX of the following questions. (6x3=18)

1. Find the basic feasible solution by NWCR method to the following transportation problem.

	PLAYER B				
PLAYER A		B_1	B_2	B_3	Avaliability
	A_1	6	5	9	400
	A_2	3	3	2	500
	Requirement	300	400	200	900

2. What is Linear Programming problem?
3. Explain MODI method to find optimal solution.
4. Define and write the scope of Operations Research.
5. Explain fair game.
6. Explain the basic concept of network and rules for drawing network diagram.
7. Explain critical path.
8. What do you mean by saddle point? When do you say that a game has saddle point?

SECTION - B

II) Answer any FOUR of the following questions. (4x8=32)

9. Solve the following linear programing problem by using simplex method
   Maximize $Z= 12x+16y$ subject to $10x+20y \leq 120$; $8x+8y \leq 80$; $x,y \geq 0$.

10. Determine an initial basic feasible solution by least cost entry method

	To				
		D_1	D_2	D_3	Supply
From	O_1	2	7	4	5
	O_2	3	3	1	8
	O_3	5	4	7	7
	O_4	1	6	2	14
	Demand	7	9	18	34

11. Solve the following by Hungarian method that the operating time is minimum.

	OPERATOR					
		A	B	C	D	E
JOB	A	9	11	14	11	7
	B	6	15	13	13	10
	C	12	13	6	8	8
	D	11	9	10	12	9
	E	7	12	14	10	14

12. Two players A and B match coins. If the coins match, then A gets Rs 5 from B and if the coins do not match B gets Rs 10 from A write the pay-off matrix and then solve the game.
13. Explain Events in the PERT and CPM network.
14. Find the solution of the game by the principle of dominance for the following

	PLAYER B				
		B_1	B_2	B_3	B_4
PLAYER A	A_1	-7	0	3	-5
	A_2	7	-2	0	-4
	A_3	-2	-1	-2	0
	A_4	4	2	3	6

SECTION – C

III) Answer any TWO of the following questions. (2x10=20)

15. Solve the following LPP graphically

    Maximize $Z= 3x+10y$

    Subject to $x+y \leq 4$; $2x+y \leq 6$; $x,y\geq 0$

16. The following details are available regarding a project. Determine the earliest and latest times, the total float for each activities, the critical activities and the project completion time.

Activity	Predecessor Activity	Duration (weeks)
A	-	12
B	A	7
C	A	11
D	A	8
E	A	6
F	B	10
G	C	9
H	D, F	14
I	E, G	13
J	H, I	16

17. Use Vogel's approximation method to find the initial basic feasible solution to the transportation problem using the following data.

	D_1	D_2	D_3	D_4	Supply
S_1	2	3	11	7	6
S_2	1	0	6	1	1
S_3	5	8	15	9	10
Demand	7	5	3	2	17