B.B.A DEGREE EXAMINATION,APRIL 2020
III Year V Semester
Operations Research

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

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

Answer any **TEN** questions

1. Define Operation Research.
2. What is meant by Decision making?
3. What is meant by slack variable?
4. Write two uses of LPP in Management Decision Making?
5. Write about North West Corner Rule in Operation Research.
6. Write the expansion for LCM and VAM.
7. What is CPM?
8. What is meant by Free Float?
9. Define Hurwicz Criterion.
10. Define Saddle Point.
11. Mention few methods of Transportation Problem.
12. Write any two advantages of Operation Research.

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

Answer any **FIVE** questions

13. Explain in detail sensitivity analysis in LPP?
14. Solve the following problem using simplex method

    Maximize $z = 21x_1 + 15x_2$ subject to the constraints $-x_1 - 2x_2 \geq -6$
15. Find the optimal solution for the assignment problem with the following cost matrix

		Area			
		W	X	Y	Z
	A	11	17	8	16
	B	9	7	12	6
Salesman	C	13	16	15	12
	D	14	10	12	11

16. A project has fourteen activities A through M. The relationships which obtain among these activities are given below. Construct the network and number them

    A is the first operation

    B and C can be formed in parallel and are immediate successor to A.

    D,E,F follow B

    G follows E

    H follows D, but it cannot start unitl E is completed.

    I and J succeed G

    F and J precede K.

    M succeeds L and K

    The last operation N succeeds M and C.

17. Write the steps to find the initial Feasible solution.

18. Distinguish between PERT and CPM.

19. Solve the following two person game whose Pay - off matrix is as follows

		Player II				
		A	B	C	D	E
	I	9	3	1	8	0
Player I	II	6	5	4	6	7
	III	2	4	3	3	8
	IV	5	6	2	2	1

Section C $(2 \times 15 = 30)$ Marks

Answer any **TWO** questions

20. A machine producing either product A or B can produce A by using 2 units of chemicals and 1 unit of a compound and can produce B by using 1 unit of chemicals and 2 units of compound. Only 800 units of chemicals and 1000 units of compound are available. The profits available per unit of A and B are respectively Rs.30 and Rs.20. Draw a suitable diagram to show the feasible region. Also, find the optimum allocation of units between A and B to maximise the total profit. Find the Maximum profit.

21. Write in detail about the importance of Operational Research in Decision making process.

22. Solve the Following Transportation Model

	A	B	C	a_i
F1	10	9	8	8
F2	10	7	10	7
F3	11	9	7	9
F4	12	14	10	4

23. Write about the aim of game theory, its classification and rules for determining the saddle point.