B.B.A. DEGREE EXAMINATION,NOVEMBER 2018
III Year V Semester
Core Major- Paper XIV
OPERATIONS RESEARCH

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

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

Answer any **TEN** questions

1. What is Operations Research?
2. Explain various types of Transportation problems?
3. What is PERT?
4. What is float?
5. What is Linear Programming?
6. What is saddle point?
7. What is decision tree?
8. What is graphical method?
9. Explain Vogel's Approximation Method?
10. The following table gives the activities of a construction project and duration (in days)

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

Draw the network diagram and find the critical path.

11. Find the saddle point for the game

		B		
		I	II	III
A	I	-2	15	-2
	II	-5	-6	-4
	III	-5	20	-8

12. Vitamins A & B are available in two different foods P & Q. One unit of P contains 2 units of vitamin A and 3 units of vitamin B. One unit of Q contains 5 units of vitamin A and 4 units of Vitamin B. The minimum daily consumption of vitamin A and B should be 1000 and 1500 units respectively. One unit of P costs Rs.5 and one unit of Q costs Rs.6. What should be the intake of P & Q in order to minimise cost.

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

Answer any **FIVE** questions

13. Explain the operation research models?
14. Given the following information, develop network.

Activity	**Immediate Predecessors**
A	-
B	-
C	A
D	A
E	C,B

15. Find the feasible solution using North West Corner rule.

	To				Availability
From	5	2	4	3	22
	4	8	1	6	15
	4	6	7	5	8
Demand	7	12	17	9	45

16. The following table gives the activities of a project and their duration in days

Activity	1- 2	1-6	2-3	2-4	3-5	4-5	6-7	5-8	7-8
Duration	7	6	14	5	11	7	11	4	18

Draw the network diagram and find the critical path

17. Solve the following LPP by graphical method:
Maximize: $Z = 2x_1 + 3x_2$
Subject to: $3x_1 + 2x_2 \leq 12$
$3x_1 + 5x_2 \leq 15$
$x_2 \geq 2$
Where x_1 , $x_2 \geq 0$

18. Explain the techniques for decision making under uncertainty situation?
19. Explain the advantages and disadvantages of PERT?

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

Answer any **TWO** questions

20. Solve the following game which shows the pay-off matrix of the player A:

		Player B			
		I	II	III	IV
Player A	I	3	2	4	0
	II	3	4	2	4
	III	4	2	4	0
	IV	0	4	0	8

21. Solve the following transportation problems:

	To			Supply
From	2	7	4	5
	3	3	1	8
	5	4	7	7
	1	6	2	14
Demand	7	9	18	34

22. Solve the following L.P.P by graphical method:
Minimize $Z = 5x_1 + 4x_2$
Subject to: $4x_1 + x_2 \geq 40$
$2x_1 + 3x_2 \geq 90$
$x_1 \geq 0$, $x_2 \geq 0$

23. Explain the merits and demerits of operation research?