QP CODE: 20101051

20101051

Reg No : .....

Name : .....

BCA DEGREE (CBCS) EXAMINATION , MARCH 2020

Fourth Semester

Bachelor of Computer Application

Complementary Course - MM4CMT03 - OPERATIONS RESEARCH

2017 ADMISSION ONWARDS

D5ACB3CF

Time: 3 Hours Marks: 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Explain the nature of operation research
2. Briefly describe some application of operation research in functional areas of management.
3. Describe any 2 limitations of OR.
4. What you mean by analogue model model.? Give any 2 examples.
5. What is a linear programming problem?
6. What are the characteristics of linear programming problems?
7. When is the solution to a LPP infeasible?
8. Distinguish between feasible solution and basic feasible solution.
9. What is a loop in Transportation problem?
10. Write the reason for unbalanced TP.
11. Define a game.
12. What is the value of the game and who will be the winner of the game.

$$\begin{bmatrix} 1 & -2 \\ 2 & -1 \end{bmatrix}$$

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Define OR. Explain the origin of OR.

14. Explain the use of OR in defence and in Industry.

15. Solve graphically the following problems

Min Z= -x+2y

Subject to $-x+3y \leq 10$

$x+y \leq 6$

$x-y \leq 2$

$x \geq 0, y \geq 0$

16. Expalin the steps followed in Bog method.

17. Determine the initial BFS of the transportation problem byVogel's approximation method.

Destinations					
Origin	A	B	C	D	Supply
1	1	5	3	3	34
2	3	3	1	2	15
3	0	2	2	3	12
4	2	7	2	4	19
Demand	21	25	17	17	

18.

Job				
Workers		x	y	z
	A	18	17	16
	B	15	13	14
	C	19	20	21

Formulate this assignment problem as an LPP.

19. Given below is a matrix showing the profit for different jobs done through different machines. Find an assignment programme which will maximize the total profit.

Machines				
	M1	M2	M3	M4
J2	51	53	54	50
J2	47	50	48	50
J3	49	50	60	61
J4	63	64	60	61

20. What is the principle of dominance and explain the modified dominance property

21. Explain two person zero sum game.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. A company produces two types of products say type A and B. Product B is superior quality and product A is of lower quality. Profits on the two types of products are rs. 30 and Rs. 40 respectively. The dataon resource required, and available of resources are given below:

	Requirement		Capacity
	Product A	Product B	
Raw materials (kg)	60	120	12000
Machining (hours per piece)	8	5	600
assembly(Man hour)	3	4	500

Solve using Simplex method

23. a)Explain the steps in North west corner rule.
b)Find the intial basic feasible solution of the following transportation problem using the north west corner rule

	D1	D2	D3	D4	Supply
O1	6	4	1	5	14
O2	8	9	2	7	16
03	4	3	6	2	5
Demand	6	10	15	4	35

24. a)Define transportation problem and asignment problem.
b) Distinguish between transportation and assignment problem.and write the mathematical representation of both.

25. (a) What do you ean by mixed strategy in game theory and how it is solved.
(b) Player A is paid Rs. 8 if two coins turn both head and Rs. 10 if two coins turn both tails. Plyer B is paid Rs. 3 when the two coins do not match. Given the choice of being A or B, which one would you choose and what would be your strategy.

(2×15=30)