(NO.OFPAGES:4)

(FOR THE CANDIDATES ADMITTED DURINGTHEACADEMICYEAR2022ONLY)

22UBM3A1

REG.NO.:

N.G.M.COLLEGE(AUTONOMOUS): POLLACHI
END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2023
COURSE NAME: B.B.A **MAXIMUMMARKS:50**
SEMESTER:III **TIME:3 HOURS**

PART – III

MATHEMATICAL TECHNIQUES - II

SECTION – A (10X1=10MARKS)

ANSWER THE FOLLOWING QUESTIONS.
MULTIPLECHOICE QUESTIONS. (K1)

1. Operation research approach is _____.
   A. multi-disciplinary
   B. scientific
   C. intuitive
   D. collect essential data.

2. A feasible solution to a linear programming problem _____.
   A. Must satisfy all the constraints of the problem simultaneously
   B. need not satisfy all of the constraints, only some of them.
   C. Must be a corner point of the feasibleregion.
   D. Must optimize the value of the objective function

3. The allocation cells in the transportation table will be called _____cell.
   A. occupied B. unoccupied C. no D. finite

4. A mixed strategy game can be solved be_____.
   A. Simplex method B.Hungarian method C. Graphical method D. Degeneracy.

5. The objectives of network analysis is to _____.
   A. Minimize total project duration
   B. Minimize total project cost
   C. Minimize production delays ,interruption and conflicts.
   D. Maximize total project duration

ANSWERTHEFOLLOWINGINONE(OR) TWO SENTENCES. (K2)

6. Define OR.
7. List and explain the assumption of LPP
8. Show the mathematical model for transportation problem?
9. What is saddle point?
10. What is PERT?

SECTION – B (5X3=15MARKS)

ANSWEREITHER (a)OR(b) IN EACH OFTHE FOLLOWINGQUESTIONS.(K3)

11. a) Explain the concept of OR.

(OR)

b) Discover the limitations models of operation research.

(CONTD……2)

12.a) Solve the following LP problem using graphical methods.
Subject to
Maximum $Z=2X_1+3X_2$
$X_1+X_2 \geq 6$
$7X_1+X_2 \geq 14$
X_1 and $X_2 \geq 0$

(OR)

b) Consider the following LP problem using simplex method.
Minimize $Z=20X_1+10\ 3X_2+10x^3$
Subject to
$8X_1+6X_2+2x_3 \leq 60$
$5X_1+X_2+6x3 \geq 40$
$2X_1$ and $6X_2+10x^3 \leq 30$
X_1+X_2 and $X_3 \geq 0$

13.a) Compare Transportation and assignment problem

(OR)

b) Explain Hungerian method

14. a) Consider the pay off matrix of player A as shown in table and solve it optimally using graphical method

		PLAYERA				
		1	2	3	4	5
	1	3	0	6	-1	7
Player A	2	-1	5	-2	2	1

(OR)

b) Consider the pay off matrix of player A as shown in table and solve it optimally using graphical method

		PLAYERA	
		1	2
	1	1	3
Player A	2	3	1
	3	5	-1
	4	6	-6

15. a) Compare CPM and PERT

(OR)

(CONTD .....3)

15. b) Project consists of activities from A to H as shown in table. The immediate predecessor(s) and the duration in months of each of the activities are given in the same table

A) Draw the project network and ,find the CPM and the corresponding project completion time

Activity	Immediate predecessor(s)	Duration(months)
A	-	5
B	-	2
C	A	3
D	C	4
E	C	2
F	B	4
G	D	7
H	E,F	6

SECTION – C (5 X 5 = 25 MARKS)

ANSWEREITHER(a)OR(b)INEACHOFTHEFOLLOWINGQUESTIONS. (K4(Or)K5)

16.a) Outline the classification of operation research.

(OR)

b) Examine the scope of operation research

17. a) Consider the following LP problem using simplex method.

Minimize $Z=2X_1+3X_2$

Subject to

$X_1+X_2 \geq 6$

$7X_1+X_2 \geq 14$

X_1 and $X_2 \geq 0$

(OR)

b) Solve the following LP problem using simplex method.

Maximize $Z=10X_1+15X_2+20X_3$

Subject to

$2X_1+4X_2+6X_3 \leq 24$

$3X_1+9X_2+6X_3 \leq 30$

X_1 and $X_2+X_3 \geq 0$

18. a) List out the types of transportation problem.

(OR)

b) Solve and find the optimal distribution by using vogel‘s approximation methods in thefirst stage to get the initial basic feasible .

		Market 1	2	3	4	5	Supply
	1	10	2	16	14	10	300
Plant	2	6	18	12	13	16	500
	3	8	4	14	12	10	825
	4	14	22	20	8	18	375
Demand		350	400	250	150	400	

(CONTD .....4)

19. a) Solve the following3*5 game using dominance property

		PLAYERB				
		1	2	3	4	5
	1	2	5	10	7	2
Player A	2	3	3	6	6	4
	3	4	4	8	12	1

(OR)

b) Explain the following terminologies of game theory

a) Players b)strategy c)two person zero sum game.

20. a) Determine the details of a project involving14activities

Activities	Immediate predecessors(s)	Duration(months)
A	-	2
B	-	6
C	-	4
D	B	3
E	A	6
F	A	8
G	B	3
H	C,D	7
IJ	C, D	2
K	E	5
L	F,G,H	4
M	F,G,H	3
N	I	13
	J,K	7

i) Construct the CPM network determine the critical path and project completion time

(OR)

b) Classify the type of decision and explain them in brief with suitable examples

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