GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

RN19002011

Registration No: | | | | | | | | | | |

Total Number of Pages : M.TECH

M.TECH 3RD SEMESTER REGULAR EXAMINATIONS, NOV 2019

OPERATIONS RESEARCH

Common to CSE/EC/PE

Subject Code:MCSOE3023/MECOE3023/MPEOE3023

Time: 3 Hours Max Marks : 70

PART-A (10 X 2=20 MARKS)

1. Answer the following questions.
   a) Differentiate between zero-sum-game and nonzero-sum game.
   b) What are the characteristics of two persons zero-sum game?
   c) What are the conditions to be satisfied for a critical path?
   d) Define critical path and activity slack.
   e) List out the applications of Non-linear programming in Optimization problems
   f) Define WSPT Rule.
   g) Define EDD Rule in sequencing problem.
   h) Differentiate between zero-sum-game and nonzero-sum game.
   i) What are the characteristics of two person zero-sum game?
   j) Explain about directed graph and undirected graph.

PART-B (5 X 10=50 MARKS)

Answer any five questions from the following.

2.a Define Dynamic programming in operations research. 5

b Solve the following by graphical method 5

maximize $z = 5x_1 + 4x_2$ subject to $6x_1 + 4x_2 \leq 24$, $x_1 + 2x_2 \leq 6$, $-x_1 + x_2 \leq 1$, $x_2 \leq 2$, $(x_1, x_2) \geq 0$

3.a Verify whether the following function is convex or concave and find the maximum or minimum solution point 5

$f(x)=4x_1^2+3x_2^2+x_3^2-6x_1x_2+x_1x_3+x_1/2-2x_2+15$

b What is simplex method? Define the role of surplus variables in simplex method? What is the solution of a LPP, when its solution is unbounded in simplex method 5

4.a Determine the saddle point solution, the associated pure strategies, and the value of the game for each of the following games. The playoffs are for player A. 5

b List out different applications of Game theory. 5

5.a Applying WSPT rule on following sequencing problem 5

Job(i)	Processing time (t_i)	Importance weight (w_i)
1	5	1
2	8	2
3	6	3
4	3	1
5	10	2
6	14	3
7	7	2
8	3	1

Calculate the Mean Flow Time and Weighted mean flow time

b What are different methods for solving Non linear problems? 5

6.a How sequencing problem is applied on 'n' jobs on 2 machines using Johnson's Algorithm? 5

b Write the procedures for processing n jobs through m machines. 5

7.a Explain about different methods for solving Generalized Geometric Programming. 5

b A and B play a game in which each has three coins, a 5 paise, 10 paise and 20 paise coins. Each player selects a coin without the knowledge of the other's choice. If the sum of the coins is an odd amount, A wins B's coins. If the sum is even, B wins A's coins. Find the optimal strategies for the players and the value of the game. 5

8. Write short notes on

a Linear Programming 5

b Critical Path 5

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