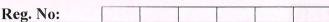
Q.P. Code: 20MB9013



SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS)

MBA I Year II Semester Regular Examinations November-2021 OPERATIONS RESEARCH

Time: 3 hours

Max. Marks: 60

SECTION – A

(Answer all Five Units $5 \times 10 = 50$ Marks)

UNIT-I

What is operations research and explain briefly its applications in industrial 1 **10M** L1organizations?

OR

2 A company manufactures two products A and B. Both the products pass through **10M** L4 two machines M1 and M2. The time require to process each unit of products A and B on each machine and available capacity of each machine is given below

Product	Machine	Machine M2		
	M1(processing time)	(processing times)		
А	6	2		
В	4	4		
Available capacity	3600	2000		

The availability of materials is sufficient to produce 500 units of A and 400 units of B. Each unit of product Λ gives a profit of rupees 25 and each unit of product B gives a profit of rupees 20. Construct a linear programming model to determine the quantity of each product to be manufactured to maximize profit.

UNIT-II

What is Degeneracy in transportation and unbalanced transportation problem? 3 **L1 10M**

OR

Find Assignment cost for the below problem through by using travelling salesmen. 4 **10M** L4

		TINIT		
D	8	15	11	9
С	12	14	13	11
В	5	10	7	8
A	10	12	9	11
	1	2	3	4

UNIT-III

What are the methods of games without saddle points? 5

L1 **10M**

OR

τ

Calculate the value of the game and find the best strategies for player A and Player L4 6 **10M** В.

	В	
1	3	6
2	1	3
6	2	1

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7 Define Project. What are the steps involved in CPM?

L1 10M

OR8 Draw the network and identify the critical path for the following problem.L5 10M

Activity	Duration
1-2	7
1-3	7
2-3	8
2-4	6
3-6	9
4-5 5-6	3
5-6	5

UNIT-V

9 Define replacement models? Explain the replacement model types in detail. L1 10M

OR

10 Find the sequence of jobs and elapsed time, idle times of 1 and 2 machines. **L4**

Job	1	2	3	4	5	6
Machine-1	5	9	4	7	8	6
Machine-2	7	4	8	3	9	5

SECTION – B

(Compulsory Question)

1 x 10 = 10 Marks

10M

There are five jobs (namely 1,2,3,4 and 5), each of which must go through machines A, B and C in the order ABC. Processing Time (in hours) are given below:

JOBS/M	1	2	3	4	5
M-A	5	7	6	9	5
M-B	2	1	4	5	3
M-C	3	7	5	6	7

Find the sequence of the jobs and elapsed time.

11

*** END ***