Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Regular & Supplementary Examinations Feb-2021
OPERATIONS RESEARCH
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1 Solve the following Problem by Graphical method 12M
Maximize $Z = 6X_1 + 10X_2$,
Subjected to $X_1 + X_2 < 70$, $X_1 < 40$, $X_2 > 20$, $2X_1 + 3X_2 < 300$.
$X_1, X_2, X_3 \geq 0$

OR

2 Solve the following Degeneracy in simplex method 12M
Maximize $3X_1 + 9X_2$,
Subjected to $X_1 + 4X_2 \leq 8$, $X_1 + 2X_2 \leq 4$, $X_1, X_2 \geq 0$

UNIT-II

3 A as salesman has visits of Five cities A,B,C,D and E the distance between the five 12M
cities is as Follows. If the salesman starts from city A and has to come back to his
starting point, which route is should be select So that the total distance travelled in
minimum.

	A	B	C	D	E
A	-	7	6	8	4
B	7	-	8	5	6
C	6	8	-	9	7
D	8	5	9	-	8
E	4	6	7	8	-

OR

4 12M

Factory		A	B	C	D	E	F	Available
	1	9	12	9	6	9	10	5
	2	7	3	7	7	5	5	6
	3	6	5	9	11	3	11	2
	4	6	8	11	2	2	10	9
Requirement		4	4	6	2	4	2	

Find the minimum transportation cost for the following data

UNIT-III

5 Solve the following GAME 12M
Graphically

		PayerA			
		I	II	III	IV
Player B	I	2	2	3	-2
	II	4	3	2	6

OR

6 Solve the following game, using the Dominance Principle   12M

		B1	B2	B3	B4	B5	B6
Firm A	A1	4	2	0	2	1	1
	A2	4	3	1	3	2	2
	A3	4	3	7	-5	1	2
	A4	4	3	4	-1	2	2
	A5	4	3	3	-2	2	2

Firm B

UNIT-IV

7 Solve the following sequencing problem of four jobs on six machines   12M

	MACHINES					
	1	2	3	4	5	6
1	19	8	8	3	11	24
2	18	6	9	6	9	18
3	12	5	8	5	7	15
4	20	5	3	4	8	11

OR

8 a A.List similarities and differences between PERT and CPM   6M
   b State the rules for drawing network diagram.   6M

UNIT-V

9 Bright Metals limited is considering two different investment proposals A&B. The details are as listed below. Suggest the best proposal on basis of NPV method. Considering the future discounted at12%. Also find out IRR of two proposals.   12M

		ProposalA	ProposalB
InvestmentCost		Rs.9500	Rs.20000
Estimated	Year1	4000	8000
	Year2	4000	8000
	Year3	4500	12000

OR

10 The yearly cost of 2machines A and B when money value is neglected is as follows   12M

Year(n)	1	2	3	4	5
MachineA	1800	1200	1400	1600	1000
MachineB	2800	200	1400	1100	600

*** END ***