

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

B.Tech. II Year II Semester Regular & Supplementary Examinations March/April-2026

OPTIMIZATION TECHNIQUES

(Common to CSM, CAI & CSIT)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

- 1 a Define Standard form of LPP. CO1 L1 2M
- b Define basic Feasible Solution. CO1 L1 2M
- c What is mean by Unbalanced in Assignment Problem. CO2 L1 2M
- d State the difference between Transportation problem and Assignment problem. CO2 L2 2M
- e Define sequencing. CO3 L1 2M
- f Define total elapsed time. CO4 L1 2M
- g Define Payoff matrix. CO5 L1 2M
- h Define mixed strategy & pure strategy. CO5 L1 2M
- i Define Total float. CO6 L1 2M
- j Define Pessimistic time. CO6 L1 2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

- 2 Solve the following Linear Programming Problem using Graphical method. Maximise $Z = 6x_1 + 8x_2$
Subject to $5x_1 + 10x_2 \leq 60$
 $4x_1 + 4x_2 \leq 40$
 x_1 and $x_2 \geq 0$



OR

- 3 Solve the following Linear Programming Problem using Big-M method. Maximize $Z = 6x_1 + 4x_2$
Subject to $2x_1 + 3x_2 \leq 30$
 $3x_1 + 2x_2 \leq 24$
 $x_1 + x_2 \geq 3$
 x_1 and $x_2 \geq 0$

UNIT-II

- 4 a Explain the procedure for North West Corner rule (NWCR). CO2 L2 5M
- b Explain the procedure for Least Cost Method (LCM). CO2 L2 5M

OR

- 5 Solve the following Transportation Problem CO2 L3 10M

	D_1	D_2	D_3	D_4	Availabilities
O_1	8	10	7	6	50
O_2	12	9	4	7	40
O_3	9	11	10	8	30
Require	25	32	40	23	

UNIT-III

- 6 a Explain the johnsons algorithm for n jobs through m machines. CO4 L2 5M
- b Explain the johnsons algorithm for Two jobs through m machines. CO4 L2 5M

OR

- 7 Four jobs are to be processed on each of the 5 machines find the total minimum elapsed time if no passing of jobs is permitted also find the idle time for each machine. CO4 L1 10M

MACHINE	JOBS			
	1	2	3	4
A	7	6	5	8
B	5	6	4	3
C	2	4	5	3
D	3	5	6	2
E	9	10	8	6

UNIT-IV

- 8 Consider the 4x4 game played by palyers A and B and slove it optimally CO5 L5 10M

Player B

	1	2	3	4
Player A 1	6	2	4	8
2	2	-1	1	12
3	2	3	3	9
4	5	2	6	10

OR

- 9 Consider the payoff matrix of player A and slove it optimally using graphical method CO5 L3 10M

Player B

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

UNIT-V

- 10 Consider the following data for the activities of a project CO6 L5 10M

Activity	A	B	C	D	E	F	G	H	I	J
Immediate predecessor	-	-	A	B	B	B	C,D	E,I	F	F
Duration (Weeks)	5	4	8	8	8	5	8	22	2	12

Draw the network and find the critical path and also find various floats.

OR

- 11 A Project consists the following activities and Different Estimate times CO6 L5 10M

Activity	Optimistic time	Most likely time	Pessimistic time
1-2	1	7	13
1-6	2	5	14
2-3	2	14	26
2-4	2	5	8
3-5	7	10	19
4-5	5	5	17
6-7	5	8	29
5-8	3	3	9
7-8	8	17	32

Draw the project network and find probability of the project completing in 40 days.

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