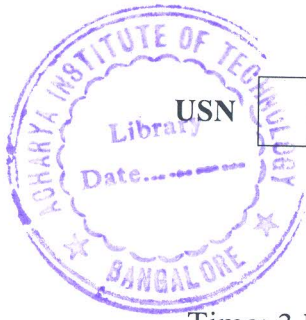


CBCS SCHEME



USN

--	--	--	--	--	--	--	--	--	--

15MN751

Seventh Semester B.E. Degree Examination, June/July 2019 Mine System Engineering

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain system engineering. (04 Marks)
b. Explain the Decision making under uncertainty. (12 Marks)

OR

- 2 a. Solve the given LPP graphically
Minimize $z = 2x_1 + 1.7x_2$
Sub to $0.15x_1 + 0.10x_2 \geq 1.0$
 $0.7x_1 + 1.70x_2 \geq 7.5$
 $1.30x_1 + 1.10x_2 \geq 10.0$
 $x_1, x_2 \geq 0$ (08 Marks)
- b. Solve by Simplex Method
Maximize $z = 3x_1 + 2x_2$
Sub to $x_1 + x_2 \leq 4$
 $x_1 - x_2 \leq 2$
 $x_1, x_2 \geq 0$ (08 Marks)

Module-2

- 3 a. Optimize the given LPP by Big M method
Minimize $z = 2x_1 + x_2$
Sub to $x_1 + 2x_2 \leq 4$
 $4x_1 + 3x_2 \geq 6$
 $3x_1 + x_2 = 3$
 $x_1, x_2 \geq 0$ (12 Marks)
- b. Explain the concept of Duality. (04 Marks)

OR

- 4 a. What are the types of inventory? (04 Marks)
b. Explain EOQ model without shortages. (12 Marks)

Module-3

- 5 a. Find the initial feasible solution to the following transportation problem by least cost method.

		Destination			Supply
		P	Q	R	
Origin	A	5	7	8	70
	B	4	4	6	30
	C	6	7	7	50
Demand		65	42	43	150

(06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, $42+8=50$, will be treated as malpractice.

- b. Find the initial feasible solution and check for optimality.

(10 Marks)

		Destination			Supply
		P	Q	R	
Origin	A	5	7	8	70
	B	4	4	6	30
	C	6	7	7	50
Demand		65	42	43	150

OR

- 6 a. Differentiate between Transportation and assignment problem.
b. Determine the optimal job assignment and the cost of assignment

(08 Marks)

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

(08 Marks)

Module-4

- 7 a. Explain the basic steps involved in PERT/CPM techniques.
b. List the advantages and applications of PERT/CPM.

(06 Marks)

(10 Marks)

OR

- 8 A project schedule has the following characteristics:

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-10	9-10
Time	4	1	1	1	6	5	4	8	1	2	5	7

- i) Construct network diagram.
ii) Compute EST and LFT for each event
iii) Calculate EFT and LST and all floats.
iv) Find critical path and project duration.

(16 Marks)

Module-5

- 9 a. Explain the characteristics of queueing system.
b. Classify the queueing models.

(12 Marks)

(04 Marks)

OR

- 10 a. What are the features of a Game?
b. Write the assumptions of a two person zero sum game.
c. Define the following terms:
i) Strategy
ii) Mixed strategy
iii) Pay off matrix
iv) Saddle point

(06 Marks)

(06 Marks)

(04 Marks)
