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MBA
(SEM II) THEORY EXAMINATION 2022-23
QUANTITATIVE TECHNIQUES FOR MANAGERS

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a. State thescope ofOperations Research.
b. Defineuncertainty in business.
c. What isLPPin OR?
d. DefineVogel's method in transportation Problem.
e. State aboutAssignmentModel.
f. What is Two-person zero-sum game?
g. What isSequencingProblem in operations research?
h. DefineQueue model.
i. What is replacement concept?
j. Define CPM for network.

SECTION B

2. Attempt any *three* of the following: **3 x 10 = 30**

a. Discuss two Operations Research Methods to solve industrial managementproblems.
b. Describe steps involved inNorth West Corner method for solving Transportation Problem.
c. Explain Hungarian Algorithmfor Assignment Problem with example.
d. Discuss the applications of Johnsons Algorithm for Sequencing problem.
e. What do you understand by Project Management? Also discuss the drawing of network diagrams.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a. What are the three Operations Research techniques for managerial decisions?
b. Discuss Decision tree approachand its importance in management.

4. Attempt any *one* part of the following: **10 x 1 = 10**

a. Solve the following linear programming problem by graphical method:
Maximize $Z = 6L_1 + 11L_2$
Subject to:

$$2L_1 + L_2 \leq 104$$
$$L_1 + 2L_2 \leq 76$$
and $L_1 \geq 0, L_2 \geq 0.$

b. Discuss the steps for initial feasible solution of Transportation Problem by using Least CostMethod.

5. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. Find two optimal solutions to the assignment problem ofmachines to joos for the cost matrix given below:

	J_1	J_2	J_3	J_4
m_1	12	8	7	8
m_2	6	6	4	8
m_3	3	5	7	4
m_4	1	3	5	4

b. What is Game Theory? Also Discussthe steps involvedin Two-person zero-sum game.

6. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. An insurance company has three claims adjuster in itsbranch office. People with claims against the company arefound to arrive in a Poisson fashion, at an average rate of20 per 8-hour day. The amount of time that an adjusterspends with a claimant is found to have an exponentialdistribution, with mean service time 40 minutes. Claimantsare processed in the order of their appearance.
(i) How many hours a week can an adjuster expect to spend with claimants?
(ii) How much time, on an average, does a claimant spendin the branch office?

b. Explain the Applications of Poisson distribution for Queuingmodel with example.

7. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. ExplainReplacement of assets whichfail suddenly with example.

b. An office construction wasanalysed as follows where v_j stands fora job.

(i) v_1 and v_2 can start simultaneously, each one taking 10days to finish.
(ii) v_3 can start after 5 days and v_4 after 4 days of starting v_1.
(iii) v_4 can start after 3 days of work on v_3 and 6 days of workon v_2.
(iv) v_5 can start after v_1 is finished and v_3 is half done.
(v) v_3, v_4 and v_5 take respectively 6, 8 and 12 days to finish.

Find the critical path and the minimum time for completion for above illustrations.