Seat No: _____________ Enrollment No: ___________________

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M. Tech. Summer 2018 - 19 Examination

Semester: 2 **Date: 01/05/2019**
Subject Code: 03216153 **Time:2:00pm to 4:30 pm**
Subject Name: Quantitative Methods in Construction Management **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A)A company has factories at A, B and C which supply warehouses at D, E, F and G. The monthly factory capacities are 160, 150 and 190 units, respectively. Monthly warehouse requirements are 80, 90, 110 and 160, respectively. Unit shipping costs (in rupees) are as follows: **(05)**

	To				
		D	E	F	G
From	A	42	48	38	37
	B	40	49	52	51
	C	39	38	40	43

Note: Solve The numerical only by VAM Method

B) Determine the optimum distribution for this company i.e problem no 1(a) to minimize shipping costs by using MODI method. **(05)**

C)What is simulation and explain its applications. **(05)**

Q.2 **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**

A)Explain in Brief
1. MAXIMIN Principle
2. MINIMAX Principle

B) Obtain the Initial basic Feasible solution to the following transportation problem by North west corner cell method.

Unit \ Depot	B1	B2	B3	B4	Stock
A1	2	3	5	1	8
A2	7	3	4	6	10
A3	4	1	7	2	20
Demand	6	8	9	15	

C)Which are the Limitations of Game of Theory?
D)Which Assumption should be made in Linear Programming Models?

Q.3 A) A company is spending 1000 on transportation of its units from three plants to four distribution centers. The availability of unit per plant and requirement of units per distribution center, with unit cost of transportation are given as follows: **(07)**

D. Centers / Plants	D1	D2	D3	D4	Availability
P1	19	30	50	12	7
P2	70	30	40	60	10
P3	40	10	60	20	18
Requirement	5	8	7	15	

B) What is the maximum possible saving by optimum distribution? Use the Stepping Stone method to solve the above problem i.e Que.no 3(a) **(08)**

OR

B) Perform optimality test by applying the MODI method for the above problem i.e Que.no 3(a) **(08)**

Q.4 A) Reduce the following game by Dominance Rule **(07)**

Player B

		B1	B2	B3	B4
Player A	A1	3	2	4	0
	A2	3	4	2	4
	A3	4	2	4	0
	A4	0	4	0	8

Also Find Value of the Game.

OR

A) Solve the following game given in the table by Graphical Method and find the Value of the Game **(07)**

Player B's Strategy

		B1	B2	B3	B4
Player A's Strategy	A1	8	5	-7	9
	A2	-6	6	4	-2

B) Solve the following game given in the table by Graphical Method and find the Value of the Game **(08)**

Player B's Strategy

		B1	B2
Player A's Strategy	A1	-7	6
	A2	7	-4
	A3	-4	-2
	A4	8	-6