

Seat
No.

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आभास - 073

307 - SPECIALIZATION - IV 437 D

Operation Management
(Operation Research)

P. Pages : 3

Time : Three Hours

Max. Marks : 60

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any three** questions from Section I and attempt **any two** questions from Section - II.
5. All questions carry equal marks.

SECTION - I

1. "Operation Research is a bunch of mathematical techniques to break Industrial problems" Critically comment. 12
2. a) Differentiate between Assignment model and transportation model. 4
b) Find the initial basic feasible solution of the transportation problem by
a) North west corner rule.
b) Least cost method if the project is to minimise the total transportation cost. 8

Distribution Centre

Plant		D ₁	D ₂	D ₃	D ₄
	P ₁	2	3	11	7
	P ₂	1	0	6	1
	P ₃	5	8	15	9

3. a) What is an unbalanced assignment problem ? How to resolve it. 3
b) The corporation has floated tenders and five contractors have sent in their jobs. Inorder to expedite work, one road will be awarded to only one contractor. Find the best way of assigning the work to the contractor. 9

		Cost of Repairs			
Contractors/Road	Road →	R ₁	R ₂	R ₃	R ₄
	C ₁	9	14	19	15
	C ₂	7	17	20	19
	C ₃	9	18	21	18
	C ₄	10	12	18	19
	C ₅	10	15	21	16

4. a) A company management and the labour union are negotiating a new three year settlement each of these has 4 strategies. 8
- Hard and aggressive bargaining
 - Reasoning and logical approach.
 - Legalistic strategy.
 - Conciliatory approach.

The cost of the company are given for every pair of strategy choice.

Company Strategies				
Union Strategies	I	II	III	IV
I	20	15	12	35
II	25	14	8	10
III	40	2	10	5
IV	-5	4	11	0

What strategy will the two sided adopt ? Also determine the value of game.

- b) Define 'saddle point'. Is it necessary that the game should always possess a saddle point. 4
5. a) A firm has a machine whose purchase price is Rs. 1,00,000 Its running cost and resale price at the end of different years are as follows. 7
- Then in which year machine must be Replaced.

Year	1	2	3	4	5	6
Running cost	7500	8500	10000	12500	17500	27500
Resale price	85000	76500	70000	60000	40000	15000

- b) Explain Average rate of return method of investment analysis. 5

SECTION - II

6. a) Write down the Hungarian or reduced matrix method. 5
- b) Find the sequence that minimise the total elapsed time required to complete the task on two machines. 7

Task :	A	B	C	D	E	F	G	H	I
Machine I	2	5	4	9	6	8	7	5	4
Machine II	6	8	7	4	3	9	3	8	11

7. Explain briefly the monte carlo method of simulation. 12
8. a) Write down the Discounted cash flow method. 6
- b) Write down the method to solve the sequencing problem of n Jobs through three machines. 6
