

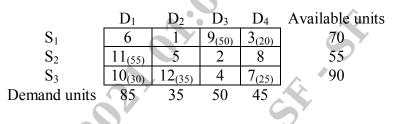
Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice. Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.

## 15ME81

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- **5** a. Define the following with respect to transportation problem:
  - i) Basic feasible solution
  - ii) Optimal solution
  - iii) Degenerate basic feasible solution.
  - b. For the following Transportation Problem a solution is given check it for optimality. If not, modify it to obtain a better solution (next best).



6 The captain of a cricket team has to allot five middle batting positions to 5 batsmen. The average runs scored by each batsman at these positions are as follows:

Batsman	Batting Position						
	Ι	II	III	IV	V		
Р	40	40	35	25	50		
Q	42	30	16	25	27		
R	50	48	40	60	50		
S	20	19	20	18	25		
Т	58	60	59	55	53		

- i) Find the assignment of batsman to positions which would give the maximum number of runs.
- ii) If another batsman 'U' with the following average runs in batting position as given below:

Battery positions:	Ι	II	III	IV	V
Average runs scored:	45	52	38	50	49

is added to the team, should he be included to play in the team? If so, who will be replaced by him? (16 Marks)

- 7 a. Define:
  - i) Preceding activity
  - ii) Dummy activity
  - iii) Network
  - iv) Slack.
  - b. Tasks A, B, C,...H, I constitute a project. The precedence relationships are A < D, A < E, B < F, D < F, C < G, C < H, F < I, G < I.

Task:	А	В	С	D	Е	F	G	Η	Ι
Time, days :	8	10	8	10	16	17	18	14	9

- i) Draw the network
- ii) Identify the critical path and duration.

(10 Marks)

(06 Marks)



(06 Marks)

(10 Marks)

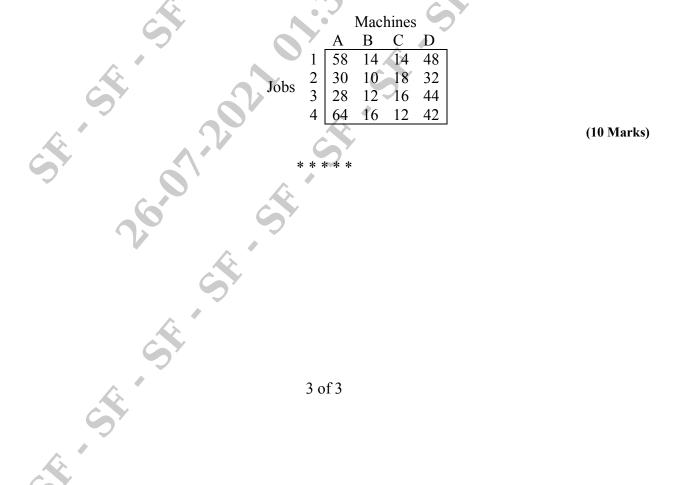
## 15ME81

(06 Marks)

- Discuss the operating characteristics of a queueing system. a.
  - A typist at an office of a company receives on the average 20 letters/day for typing. The b. typist works 8 hours a day and it takes on the average 20 minutes to type a letter. The cost of a letter waiting to be mailed is 80 paise/hr and the cost of the equipment plus salary of the typist is Rs.45 per day.

Player B

- What is the typists utilization rate? i)
- ii) What is the average number of letters waiting to be typed?
- What is the average waiting time needed to have a letter typed iii)
- What is the total daily cost of waiting letters to be mailed. iv)
- 9 Define: a.
  - i) Strategy
  - ii) 2 person zero sum game
  - Pay off matrix. iii)
  - Solve the following game by using principle of dominance: b.
    - VI Π III IV V 2 0 1 1 3 1 3 2 2 7 Player A 3 4 3 -5 1 2 3 4 2 -1 2 4 3 3 -2 2 2
- Discuss any three priority rules of processing n jobs through one machine. 10 a. (06 Marks)
  - Four jobs 1, 2, 3 and 4 are to be processed on each of the four machines. A, B, C and D in b. the order ABCD. The processing times in minutes are given in the table below. Find, for no passing the minimum elapsed time and idle time for each machine.





8

(10 Marks)

(06 Marks)

(10 Marks)