



17ME81

- b. A product is produced by four factories A, B, C and D and their unit production costs in them are Rs.2, 3, 1 and 5 respectively. Their production capacities are factory A – 50 units, B – 70 units, C – 30, D – 50 units. These supply the products to four stores with their demands of 25, 35, 105 and 20 units respectively. Unit transportation cost from each factory to each store is given in Table.Q6(b). Determine the extent of deliveries from each factory to each store, so that total cost of production cum transportation is minimum.

		Stores			
		1	2	3	4
Factories	A	2	4	6	11
	B	10	8	7	5
	C	13	3	9	12
	D	4	6	8	3

Table.Q6(b)

(14 Marks)

- 7 A small project is composed of activities with their time estimates listed in Table.Q7.
- Draw project network
 - Find expected duration and variance of each activity and its expected project length
 - What is the probability of completing project:
 - Atleast 4 weeks earlier than expected.
 - If project is due in 19 weeks, what is the probability of meeting the due date?

Activity	t_o	t_m	t_p
1 - 2	1	1	7
1 - 3	1	4	7
1 - 4	2	2	8
2 - 5	1	1	1
3 - 5	2	5	14
4 - 6	2	5	8
5 - 6	3	6	15

Table.Q7

(20 Marks)

- 8 a. State and explain in brief Kendall's notation for representing queuing models. **(06 Marks)**
- b. A self service store employs one cashier at its counter. An average of 9 customers arrive every 5 minutes while the cashier can serve 10 customers in 5 minutes. Assuming Poisson distribution of arrival rate and exponential distribution of service rate find:
- Average number of customers in system
 - Average number of customers in queue
 - Average time a customer spends in system
 - Average time a customer waits before being served.

(14 Marks)

- 9 a. Explain the following terms: (i) Pay off matrix (ii) Saddle point (iii) Fair game **(06 Marks)**
- b. Use dominance rule to find the optimum strategies for both players.

	B_1	B_2	B_3	B_4	B_5	B_6
A_1	4	2	0	2	1	1
A_2	4	3	1	3	2	2
A_3	4	3	7	-5	1	2
A_4	4	3	4	-1	2	2
A_5	4	3	3	-2	2	2

(14 Marks)

- 10 a. State assumptions made while applying Johnson's rule to n jobs on 2 machines. **(06 Marks)**
- b. Use graphical method to minimize the time required to process the jobs. Details of processing time (hrs) and sequence given below:

Job 1:	A - 4, C - 2, D - 6, E - 3, B - 2
Job 2:	C - 8, A - 3, D - 4, B - 2, E - 3

Find sequence of jobs on each machine and total elapsed time for both jobs. **(14 Marks)**