

❖ From the following 06 questions attempt any 03: (60 Marks)

- 1) A company produces two types of leather belts; say A and B. Belt A is of a superior quality and belt B is of a lower quality. Profits on the two types of belts are Rs. 4 and Rs. 3 per belt respectively. Each belt of type A requires twice as much time as required by belt of type B. If all belts were of type B the company could produce 1000 belts per day. But the supply of leather is sufficient only for 800 belts per day. Belt A requires a fancy buckle and only 400 fancy buckles are available per day. For belt of type B only 700 buckles are available per day. How should company manufacture two types of belts in order to have a maximum overall profit?
- 2) Obtain basic feasible solution of the following transportation problem by Vogel's method.

	I	II	III	IV	V	VI	Supply
A	12	11	13	13	10	15	50
B	13	12	12	14	13	10	40
C	13	15	14	12	14	11	60
D	14	12	11	11	10	12	31
Requirement	30	50	20	40	30	11	181

- 3) A National car service has a surplus of one car in each of the cities A,B,C,D,E,F and a requirement of one car in each of the cities P,Q,R,S,T and U. The distance (In Kms.) between cities with a surplus and cities with a requirement are given in the matrix below. How should the cars be dispatched so as to minimize the total distance travelled?

		To					
		P	Q	R	S	T	U
From	A	41	62	39	52	25	51
	B	22	29	49	65	81	50
	C	27	29	60	51	32	32
	D	45	50	48	52	37	43
	E	29	40	39	26	30	33
	F	82	40	40	60	51	30

4) Construct PERT Network for the following data and determine critical path.

Activity	a	b	c	d	e	f	g
Preceding Activity	-	a	a	b	c, d	c	e, f
Time	16	6	10	8	12	8	14

5) The numbers of days of completing different jobs of a project are given below. Prepare a network of the project. Find EST, EFT, LST and LFT. Determine critical path.

Activity	1-2	1-6	2-3	2-4	3-5	4-5	6-7	5-8	7-8
Time (in days)	8	4	14	7	13	8	10	5	20

6) The cost price of a Refrigerator is Rs. 25000. Its maintenance cost and the resale value at the end of each year is given as follows. When should the refrigerator be replaced?

Year	1	2	3	4	5	6	7
Maintenance cost (in Rs.)	300	800	1400	2100	2800	3800	4600
Resale value (in Rs.)	18000	14000	10000	8000	7000	5000	3000