



13. A company has 3 plants and 3 warehouses. The cost of sending a unit from different plants to the warehouses, production at different plants and demand at different warehouses are shown in the following cost matrix table :

Plants	Warehouses	A	B	C	Production
X		8	16	16	152
Y		32	48	32	164
Z		16	32	48	154
Demand		144	204	82	

Determine a transportation schedule, so that the cost is minimized. Assume that the cost in the cost matrix is given in thousand of rupees.

14. Enumerate and explain the steps in multiple objective programming.

(6 × 3 = 18 weightage)

### Part C

Answer any two questions.  
Each question carries 6 weightage.

15. Find the maximum value of  $f = 10x + 8y$  subject to

$$2x + 3y \leq 120$$

$$5x + 4y \leq 200$$

$$x \geq 0 \quad y \geq 0.$$

16. For the following data, draw the network diagram, and then crash the activities to find the time-cost trade-off points that the company should want to consider. Start with the plan that has the longest duration.

Activity	Preceding Activity	Time (weeks)		Cost (Rs. 000s)	
		Normal Program	Crash Program	Normal Program	Crash Program
A	—	2	2	5	5
B	A	5	3	11	21
C	A	2	1	7	16
D	B,C	4	2	8	22
E	B	3	2	9	18
F	D,E	3	3	9	9

17. A bakery shop keeps stock of a popular brand of cake. Previous experience indicates the daily demand as given here :

<i>Daily demand</i>	...	0	10	20	30	40	50
<i>Probability</i>	...	0.01	0.20	0.15	0.50	0.12	0.02

Consider the following sequence of random numbers ;

R. No. 48, 78, 19, 51, 56, 77, 15, 14, 68, 09

Using this sequence, simulate the demand for the next 10 days. Find out the stock situation if the owner of the bakery decides to make 30 cakes every day. Also, estimate the daily average demand for the cakes on the basis of simulated data.

(2 × 6 = 12 weightage)