Q3. A manufacturer has bids for 5 subcontracts for 5 firms. One firm can take only one job. The table shows the bids and the output estimates (in 100000) for doing the jobs. Note that no two jobs can be performed internally. Solve the problem using Hungarian method to maximizing total output.

			jobs			
		L	M	N	O	P
	A	4	6	11	16	9
firms	B	5	8	16	19	9
	C	9	13	21	21	13
	D	6	6	9	11	7
	E	11	11	16	26	11

OR

In the machine shop, 8 different products are being manufactured each requiring time on machine A and B as given below.

Product	I	II	III	IV	V	VI	VII	VIII
Machine A	30	45	15	20	80	120	65	10
Machine B	20	30	50	35	36	40	50	20

Q4 A company has four terminals with 10, 4, 6, 5 trailers available and 13, 10, 6, 6 trailers were loaded from four warehouses. Find the optimal solution of the following transportation problem.

	W1	W2	W3	W4
F1	20	36	10	28
F2	40	20	45	20
F3	75	35	45	50
F4	30	35	40	25

OR

Q Construct Dual and Solve the Primal and Dual problem graphically

$$Maximize\ z = 6x_1 + 8x_2$$

Subject to:

$$5x_1 + 2x_2 \leq 20$$

$$x_1 + 2x_2 \leq 10$$

$$x_1, x_2 \geq 0$$