Department of MACS, N.I.T.K.Surathkal

Time : 60 minutes **M! 852 Optimization Techniques Test** Max marks:30

1.Three electric power plants with capacities of 25, 40 and 30 mkh supply electricity to three cities whose maximum demands are estimated at 30, 35 and 25 mkh. The cost of selling power to the different cities per mkh are as follows (in US$):

	City 1	City 2	City 3	Supply
Plant 1	600	700	400	25
Plant 2	320	300	350	40
Plant 3	500	480	450	30
Demand	30	35	25	

During the month of September, there is a 20% increase in demand at each of the three cities. To meet the excess demand, the power company must purchase additional electricity from another network at a flat price of 1000$ per mkh. This network is however not linked to city 3. Formulate the problem as a Transportation Model and solve for the purpose of establishing the most economical distribution for the power company during the summer. (10)

2. Find the optimal assignment to the following AP :

	Operator 1	Operator 2	Operator 3	Operator 4	Operator 5
Operation 1	15	18	10	20	13
Operation 2	25	30	28	35	32
Operation 3	10	13	15	17	12
Operation 4	20	25	23	28	30
Operation 5	5	10	8	11	7

Operation 5 cannot be given to operator 2 due to technical reasons and

operator 3 should be given operation 4. (10)

3.A student has to select one and only one elective in each semester and the same elective should not be selected again, once it is chosen. Due to various reasons, the expected grades in each semester if selected in different semester vary and they are given below:

	Elective 1	Elective 2	Elective 3	Elective 4
Semester I	E	F	D	A
Semester II	A	D	C	F
Semester III	S	E	C	D
Semester IV	F	B	E	A

The grade points are S = 10, A = 9, B = 8, C = 7, D = 6, E = 5, F = 4. How a student should select the electives in order to maximize the total expected grade points? (10)

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