Mechanical Engineering Department

B Tech (6th sem.) CT-I MEU601 ORM Marks: 15 Time: 1Hr Date : 02/02/2015

Q1.Solve any one (3)

(i) "Operations research is a tool for decision making" Justify.

(ii) Find dual of L.P. problem given in Q2.

Q2. Solve the following L.P. problem using Simplex method (4)

Maximize $Z = 2X_1 + X_2$

Subject to $X_1 + 2X_2 \leq 10$; $X1 + X_2 \leq 6$; $X_1 - X_2 \leq 2$; $X_1 - 2X_2 \leq 1$
$X_1, X_2 \geq 0$

Q3. National Oil Company has three refineries and four depots. The capacity of each refinery, transportation cost in Rs / ton and requirement at each depot are given in the following table. Determine the optimum allocation of output. (4)

Refinery	Depot				Capacity (tons)
	D1	D2	D3	D4	
R1	5	7	13	10	700
R2	8	6	14	13	400
R3	12	10	9	11	800
Requirement (tons)	300	600	700	400	

Q4. Four jobs are to be done on four different machines. Assign the jobs so as to maximize the total profits. (4)

Jobs	Machine			
	M1	M2	M3	M4
J1	15	11	13	15
J2	17	12	12	13
J3	14	15	10	14
J4	16	1	11	17

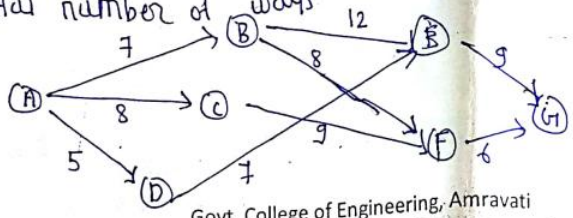
Govt. College of Engineering, Amravati
MEU601 Operation Research Management
CT-3 Exam Question Paper
Date: 28th March 2017, Time: 10:30 AM – 11:30 AM

Answer any 3 of the 4 questions.

Problem 1 (9 marks) : A stockiest has to supply 9500 units/year. The cost of 1 procurement is 110 Rs. And the holding cost per unit is 2.5 Rs./year. The cost of 1 unit is 3 Rs. The replacement is instantaneous and no shortages are allowed. Determine:
(a) the economic lost size
(b) the time between orders (in months)
(c) the number of orders per year
(d) the total cost per year (include the variable cost)

Problem 2 (8 marks): State any 8 types of inventories and explain each in one sentence. =-

ion 4 : find the route from A to G that takes less no of days. also find (8 marks) : the total number of ways



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(8 marks) Question 3 :- find the most optimal allotment of 8 representatives to 3 areas. the profit for each representative in each area is given below. what is the maximum profit for this allotment.

Area/Rep.	0	1	2	3	4	5	6	7	8
A1	10	12	15	18	20	22	25	36	28
A2	8	13	16	30	36	10	18	30	16
A3	9	10	32	30	25	20	22	23	20

Mechanical Engineering Department

CT-I MEU601 ORM

Marks: 15 Time: 1 Hr Date 28/1/16

Q1. The project is composed of the following 7 activities. The time estimates in days for the activities are as follows

Activity	1-2	1-3	1-4	2-5	3-5	4-6	5-6
t_o	12	3	12	1	2	4	5
t_m	15	4	22	1	5	5	6
t_p	17	7	28	1	14	8	10

a. Draw the network

b. Find variance for each event

c. Find EST, EFT, LST, LFT and Slack for each activity 5 marks

Q2. The following data pertains to CPM network .Crash the network by 3 days. Compare initial cost of the project and cost after crashing. Indirect cost is Rs 100 per day.

	Normal		Crash	
Activity	Time	Cost	Time	Cost
0-1	1	5000	1	5000
1-2	3	5000	2	12000
1-3	7	11000	4	17000
2-3	5	10000	3	12000
2-4	8	8500	6	12500
3-4	4	8500	2	16500
4-5	1	5000	1	5000

5 marks

Q3. What is Operations Research? Describe briefly the different phases of Operations Research.

5 marks

OR

Q4. State the applications of Linear Programming. Define and explain the following terms

(a) Objective function (b) Constraints (c) Optimal Solution 5 marks