

**EASTERN UNIVERSITY SRI LANKA**  
**FACULTY OF COMMERCE AND MANAGEMENT**  
**PART II EXAMINATION IN BACHELOR BUSINESS**  
**ADMINISTRATION/COMMERCE 1998/99(EXTERNAL DEGREE - MARCH 2005)**  
**BBA/COM 305 MANAGEMENT SCIENCE**



Answers any five questions including question No.01

Time: 03 hours

1. The following table gives the details of time and cost estimates of activities of a project.

ACTIVITY	NORMAL TIMES(DAYS)	NORMAL COST (RS 000)	POSSIBLE REDUCTION IN TIME (DAYS)	EXTRA COST FOR REDUCTION OF ONE DAY (RS 00)
1-2	5	6	1	3
1-3	8	10	2	2
1-4	15	17	4	7
2-3	4	5	1	4
2-5	12	15	3	2
3-4	6	8	2	2
4-5	7	9	1	4
4-6	11	13	3	3
4-7	10	12	2	6
5-6	8	14	2	3
6-8	9	25	3	1
7-8	10	13	2	5

Fine cost is 500/= per day

You are required to

- Calculate and state the times for completion on normal basics
- Calculate and state the critical path or paths on this basic and normal cost
- Calculate and state the cost of completion in the shortest possible time and associated cost.
- Total cost of each activity

(28 Marks)

2. Consider the following data for the transportation problem.

FACTORY	DESTINATION			SUPPLY
	(1)	(2)	(3)	
A	5	1	7	10
B	6	4	6	50
C	3	2	5	15
Demand	75	20	50	

Since there is not enough supply some of the demands at the three destinations may not be satisfied for the unsatisfied demands. Let the penalty cost be rupees 1, 2 and 3 for destinations (1), (2) and (3) respectively.

Find the optimal allocation that minimizes the transportation and penalty costs.

- Use the VAM method to initial allocation
- Use the MODI method to optimality test (20 Marks)

3. Timber Ltd has products sofa & chair. To produce one unit of sofa two units of material X & A units of material Y are required. To produce one unit of chair three units of material X and two units of material Y are required. As the raw material is in short supply not more than 16 units of each material can be used. The cost per unit of material X and material Y are Rs 2.50 and Rs 0.25 respectively. At least two units of sofa must be produced and sold.

You are required

1. To formulate mathematical model.
2. To solve it for minimum cost (Graphically) (20 Marks)

4. A solicitor firm employs typists on hourly piece basic for their daily work. There are five typists for service and their charges and speeds are different; According to an early understanding only one job is given to one typist and the typist is paid for full hours. Find the least cost allocation for the following data.

TYPIST	RATE/HOUR	NO OF PAGES/ HRS	JOB	NO OF PAGES
A	5	12	P	199
B	6	14	Q	175
C	3	8	R	145
D	4	10	S	298
E	4	11	T	178

(16Marks)

Describe the following

- Assumptions of Network Analysis.
- Total float of an activity.
- Assumption of Inventory control.
- Dummy activity and critical path.



(16Marks)

A firm is able to obtain quantity discounts on its order of material and shown in table.

PRICE/TON (RS)	TON BOUGHT
6.00	Less than 250
5.90	250 and less than 800
5.80	800 and less than 2000
5.70	2000 and less than 4000
5.60	4000 and over

The annual demand for the material is 4000 tons.

Store holding costs are 20 percent per year of material cost

The delivery cost per order is Rs 6.00

Calculate the best Quantity to order?

(16Marks)