



**III Semester 5 Year B.B.A., LL.B. (Hons.) Examination, December 2012**  
**QUANTITATIVE TECHNIQUES**

Duration : 2 ½ Hours

Max. Marks : 70

- Instructions:** 1. Answer all **5** Questions.  
2. **One** essay type and **one** short note question or problem from **each** Unit have to be attempted, which is referred as part **(a)** and **(b)** in **all** the Units.  
3. Figures to the **right** indicate marks.

**UNIT – I**

Q. No. 1. (a) Discuss the origin and development of Operations Research.

What are the limitations of Operations Research ?

Marks : 9

OR

What is Operations Research ? What are the characteristics and limitations of OR techniques ?

(b) Write a short note on

Objectives of Operations Research.

Marks : 5

OR

Methods of Operations Research.

**UNIT – II**

Q. No. 2. (a) What is linear programming ? Explain the few application areas in business.

Marks : 9

OR

P.T.O.



A firm manufactures three products A, B and C. The profits are Rs. 3, Rs. 2 and Rs. 4 respectively. The firm has two machines and the required processing time in minutes for each machine on each product is given below :

		Product		
		A	B	C
Machine	X	4	3	5
	Y	2	2	4

Machines X and Y have 2000 and 1500 machine minutes respectively. The firm must manufacture 100 A's, 200 B's and 50 C's but, no more than 150 A's. Set up LP model to maximise the profit.

(b) Advantages of linear programming.

Marks : 5

OR

Limitation of linear programming.

### UNIT – III

Q. No. 3. (a) Find the initial basic feasible solution to the following transportation problem by

- Minimum cost method
- North-West Corner Rule

State which of the methods is best.

		To			Supply
From		2	7	4	5
		3	3	1	8
		5	4	7	7
		1	6	2	14
Demand		7	9	18	

Marks : 9

OR

Explain transportation problem giving examples.



(b) Write a short note on :

North-West Corner Rule method.

Marks : 5

OR

Least Cost Method.

### UNIT – IV

Q. No. 4. (a) Describe the assignment problems with suitable examples.

Marks : 9

OR

Consider the problem of assigning five operators to five machines. The assignment costs are given below :

		(Operators)				
		I	II	III	IV	V
(Machines)	A	10	5	13	15	16
	B	3	9	18	3	6
	C	10	7	2	2	2
	D	5	11	9	7	12
	E	7	9	10	4	12

Assign the operators to different machines so that total cost is minimized.

(b) Write a short note on :

Balanced assignment problem.

Marks : 5

OR

The Hungarian Method.



### UNIT – V

Q. No. 5. (a) A project has the following schedule :

Activity	Expected time	Activity	Expected time
1 – 2	2	4 – 7	4
1 – 3	2	5 – 8	2
1 – 4	2	6 – 8	4
2 – 5	4	7 – 9	5
3 – 6	5	8 – 9	3
3 – 7	8	9 – 10	4

**Required :**

- Construct PERT Network.
- Find critical path and its duration.

Marks : 9

OR

What are the steps followed in use of PERT and CPM tool ?

- Write a short note on :
  - Optimistic time
  - Pessimistic time

Marks : 5

OR

CPM (critical path method).

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