# M. B. A. (Sem. I) (CBCS) Examination

## November / December – 2017

# Quantitative Techniques in Management

Time : **3** Hours]                                   [Total Marks : **70**

**Instruction :**   All the questions carry equal marks.

**1**    Solve the following problem using transportation method, obtaining the initial feasible solution by VAM.

| From | To | | | | Supply |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | |
| 1 | 7 | 9 | 4 | 13 | 8 |
| 2 | 5 | 10 | 10 | 10 | 9 |
| 3 | 9 | 16 | 5 | 14 | 8 |
| 4 | 5 | 9 | 6 | 9 | 7 |
| 5 | 10 | 11 | 10 | 14 | 8 |
| 6 | 7 | 15 | 4 | 13 | 7 |
| Demand | 12 | 11 | 15 | 9 | |

**OR**

**1**    What is an Operations research? With the help of suitable examples explain how operation research is helpful for business organizations.

**2**    (A)   What is meant by CPM and PERT ? Explain their importance for a business concerns with the help of suitable examples.

(B)   Discuss the moving average model of forecasting and mention its drawback.

**OR**

**2** Given the pay-off matrix in respect of two person, zero sum game.

| A's Strategy | B's Strategy | | | | |
|:---:|:---:|:---:|:---:|:---:|:---:|
| | $B_1$ | $B_2$ | $B_3$ | $B_4$ | $B_5$ |
| $A_1$ | 8 | 10 | −3 | − 8 | − 12 |
| $A_2$ | 3 | 6 | 0 | 6 | 12 |
| $A_3$ | 7 | 5 | −2 | −8 | 17 |
| $A_4$ | −11 | 12 | −10 | 10 | 20 |
| $A_5$ | −7 | 0 | 0 | 6 | 2 |

(A) Write the maximin and minimax strategies

(B) Is it a strictly determinable game ?

(C) What is the value of the game ?

(D) Is this game a fair one ?

**3** What is a game theory? State the assumptions underlying it. Discuss its importance to business decisions.

**OR**

**3** From the following information draw a network diagram and obtain a Critical Path.

| Activity | $A$ | $B$ | $C$ | $D$ | $E$ | $F$ | $G$ | $H$ | $I$ |
|:---:|:---:|:---:|:---:|:---:|:---:|:---:|:---:|:---:|:---:|
| Predecessor Activity | − | − | − | $A$ | $A$ | $B,D$ | $C$ | $B,G$ | $F,G$ |
| Time (in Days) | 23 | 8 | 20 | 16 | 24 | 18 | 19 | 4 | 10 |

**4** (A) Discuss the Delphi method of making forecast.

(B) What is simulation? Describe the simulation process. What are the advantages and limitations of simulation?

**OR**

4 The following data relates to office where 5 jobs are to be allotted to operators for work.

| Operator | Jobs | | | | |
|----------|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 |
| 1 | 5 | 7 | 8 | 6 | 12 |
| 2 | 6 | 2 | 5 | 8 | 4 |
| 3 | 7 | 4 | 3 | 5 | 8 |
| 4 | 11 | 14 | 9 | 13 | 12 |
| 5 | 9 | 7 | 11 | 10 | 13 |

Solve the following assignment problem of minimizing the total time for doing all the jobs.

5 Write Short Notes on : (Any **Two**)

(a) Management Information System

(b) Decision Tree

(c) Solutions to Models

(d) Linear Programming Problems.

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