## Unit III

## CC-421

## M.B.A. EXAMINATION, May 2017

(Third Semester)<br>(Re-appear Only)<br>APPLIED OPERATION RESEARCH<br>MBA-201<br>[Maximum Marks : 70

Time : 3 Hours]
$\overline{\text { Before answering the question-paper candidates }}$ should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt Five questions in all, selecting at least one question from each Unit. All questions carry equal marks.

## Unit I

1. "OR is the application of scientific methods,
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techniques and tools to problem involving the operations of a system so as to provide those in control of the system with optimum solution to the problem." Discuss.
2. A firm manufacturers 3 product $\mathrm{A}, \mathrm{B}$ and C . The profits are Rs. 3, Rs. 2 and Rs. 4 respectively. The firm has 2 machines and below is the required processing time in minutes for each machine on each product :

| Machine | Product |  |  |
| :--- | :---: | :---: | :---: |
|  | A | B | C |
| G | 4 | 3 | 5 |
| H | 2 | 2 | 4 |

Machine G and H have 2000 and 2500 machineminutes respectively. The firm must manufacture 100 A's, 200 B's and 50 C's but no more than 150 A's. Setup as L.P. Problem to maximize profit.

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## Unit II

3. Describe the transportation problem. Give a method of finding an initial feasible solution. Explain what is meant by an optimality test. Give the method of improving over the initial solution to reach the optimal feasible solution. 14
4. A multi-plant company has three manufacturing plants $\mathrm{A}, \mathrm{B}$ and C and two markets X and Y production cost at $\mathrm{A}, \mathrm{B}$ and C is Rs. 1,500, 1,600 and 1,700 per piece respectively. Selling prices in X and Y are Rs. 4,400 and Rs. 4,700 respectively. Demand in X and Y are 3,500 and 3,600 pieces respectively. Production capacities at A, B and C are 2000, 3000 and 4000 pieces respectively. Transportation costs as shown in below table. Build a mathematical model : 14

| Plant | Market |  |  |
| ---: | :---: | :---: | :--- |
|  |  |  |  |
|  | $\mathbf{X}$ | $\mathbf{Y}$ |  |
| A | 1,000 | 1,500 |  |
| B | 2,000 | 3,000 |  |
| C | 1,500 | 2,500 |  |
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