## First Year MHA Degree Supplementary Examinations January 2020

## **Operations Research**

# (2013 Scheme)

Time: 3 Hours

- Max Marks: 100
- Answer all questions to the point neatly and legibly Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space
- Answer all parts of a single question together Leave sufficient space between answers
- Draw table/diagrams/flow charts wherever necessary
  Ordinary calculator can be used (2x20=40)

#### Essays:

- 1. What is replacement problem. When does it arise. Discuss the replacement procedure for the items that deteriorate with time.
- 2. Use simplex method to solve:

Maximize: Z=3x1+2x2+5x3". Subject: to be constraints  $X_1+2x_2+X_3 \ge 430$  $3x_1 + 2x_3 \ge 460$ 

 $X_1 + 4x_2 \ge 420$  $X_1, X_2, X_3 \ge 0$ 

### Short Essays:

- 3. Discuss the Queuing theory and its application in hospital
- 4. The initial price of equipment is Rs. 5000. The running cost varies as shown below.

Year	1	2	3	4	5	6	7
Running cost	400	500	700	1000	1300	1700	2100

Taking a discount rate of 0.90, find out the optimum replacement interval.

#### Short notes:

- 5. Linear programming
- 6. 'Simulation technique'
- 7. Assignment maximization problem
- 8. Briefly explain the important characteristics of queuing system
- 9. What are the various types of inventories. Explain briefly
- 10. Describe the method of processing 'n' jobs through two machines
- 11. Enumerate different phases in operation research
- 12. PERT & CPM

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(8x5=40)

(2x10=20)