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Printed pages: 01 **Sub Code: RCA304**

Paper id | 1 | 4 | 1 | 3 | **Roll No.** | | | | | | | | | | |

MCA

(SEM III) THEORY EXAMINATION 2017-18

Computer Based Optimization Techniques

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

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. What is meant by a mathematical model of real situation?
b. Define inventory. What are the various type of inventory?
c. Explain Sensitivity Analysis.
d. What do you mean by Queueing Theory?
e. Explain Dynamic Programming. States its applications.
f. Explain the Bellman's principle of optimality.
g. Explain limitations of EOQ.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Explain the Hungarian Assignment method to solve an assignment problem. Also write the algorithm.
b. What do you mean by Non-Linear programming?
c. What are inventory models? Give the classification of different inventory models and describe them briefly.
d. Define the concept of busy period in queuing theory and obtain its distribution for the system M/M/1 :(∞/FCFS).
e. Use Big-M Method to solve it.
Max $Z=3x_1-x_2$ Subject to the constraints
$2x_1+x_2\geq 2$,
$x_1+3x_2\leq 3$,
$x_2\leq 4$ and $x_1-x_2\geq 0$

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Discuss Wolfe's method for solving a quadratic programming problem.
(b) Show that inter-arrival times are distributed exponentially, if arrival is a poison process.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) What is the dynamic recursive relation? State the 'principle of optimality' in dynamic programming.
(b) Give the advantage and limitations of graphical method for solving LPP.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain Relation between primal and its dual in LPP
(b) Explain degeneracy in a transposition problem. How degeneracy is overcome?

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) What do you mean by Sensitivity analysis?
(b) Develop a algorithm for north west corner method for solving transposition problem.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Erlang Distribution. (b) Markovian process.

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