CC-684

M.C.A. EXAMINATION, May 2018

(Third Semester)

(B. Scheme) (Re-appear Only)

(M.C.A.)

MCA507

ALGORITHM ANALYSIS AND DESIGN

Time : 3 *Hours*]   [*Maximum Marks :* 75

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. (a) Explain space complexity and time complexity with example. **10**

(b) Explain O-notation in asymptotic notation. **5**

2. Explain Binarys earch algorithms. Explain its complexity and benefits. **15**

Unit II

3. Explain Job sequencing with dead line in greedy method. Using greedy algorithm find an optimal schedule for following jobs with $n = 7$ profits :

$(P_1, P_2, P_3, P_4, P_5, P_6, P_7) = (3, 5, 18, 20, 6, 1, 38)$ and deadline $(d_1, d_2, d_3, d_4, d_5, d_6, d_7) = (1, 3, 3, 4, 1, 2, 1)$.` **15**

4. Explain optimal binary search trees in dynamic programming. Taking any suitable example. **15**

Unit III

5. (a) Write an algorithms to solve the Knapsack problem with Branch and Bound. **10**

(b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem. **5**

6. Explain 8 queen's problem using back tracking. **15**

Unit IV

7. (a) Explain the classes of P and NP. **10**

(b) Explain the cooks theorem. **5**

8. Explain NP scheduling problem with some specified NP hard problem. **15**