SSLC, HSE, DIPLOMA, B.E/B.TECH, M.E/M.TECH, MBA, MCA

Notes   *Available @*
Syllabus
Question Papers   www.AllAbtEngg.com
Results and Many more…

Reg. No. :

Question Paper Code : 70792

M.C.A. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Third Semester
MC5301 – ADVANCED DATA STRUCTURES AND ALGORITHMS
(Regulations 2017)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. What are the steps to be involved while deleting a node in a circularly linked list ?

2. List out the applications of stack.

3. Define nomial heap.

4. Compare Binary search tree with balanced trees.

5. How do you represent a graph ?

6. State the various issues in Flyod's algorithm.

7. Give the various types of Asymptotic notations.

8. What is feasible and optimal solution ?

9. How approximation algorithms are used for NP – hard problems ?

10. What are the additional items required for branch and bound to compare backtracking techniques ?

PART – B   (5×13=65 Marks)

11. a) i) Write an algorithm to implement three stacks in one array.   (7)

    ii) Write a detailed notes on the applications of Queues.   (6)

                              (OR)

    b) i) Write an algorithm to print the elements of a linked list using arrays.   (7)

    ii) Describe the basic concepts of polynomial manipulation using list. Illustrate with examples.   (6)

SSLC, HSE, DIPLOMA, B.E/B.TECH, M.E/M.TECH, MBA, MCA
Notes   Available @
Syllabus
Question Papers   www.AllAbtEngg.com
Results and Many more…

70792

12. a) i) Explain how a node is inserted in splay tree, with example. (7)

     ii) Discuss about AVL tree, with example. (6)

(OR)

b) i) Illustrate the basic concepts of Fibonacci heaps. (7)

    ii) Define B-tree. Discuss about the operations. (6)

13. a) i) Write an algorithm to find a minimum spanning tree of a weighted directed graph with example. (7)

     ii) Distinguish between depth first search and breadth first search. (6)

(OR)

b) i) What is topological sorting ? Explain with a suitable example. (7)

    ii) Discuss about the Kruskal's algorithm, with example. (6)

14. a) i) Write down the optimization technique used for Warshall's algorithm. (8)

     ii) Describe the basic concepts of Quick sort algorithm. (5)

(OR)

b) i) Explain how do you create optimal binary search tree ? Give example. (8)

    ii) Illustrate the basic principles of Knapsack problem. (5)

15. a) i) Compare dynamic programming approach with greedy approach for a given problem. (8)

     ii) What is meant by NP complete problems ? Describe the basic concepts. (5)

(OR)

b) Write short notes on :

    i) Assignment problem. (7)

    ii) Amortized analysis. (6)

PART – C   (1×15=15 Marks)

16. a) How do you devise an N Queen problem by any two suitable techniques ? How do you extend this concept if N = 4 and 8. In both cases, how do you analyze the complexities. Explain. (15)

(OR)

b) Explain an algorithm for solving travelling salesman problem, in minimum time. The specifications of the problem, includes 8 cities, naming A, B, C,. . .,H. The distance between two cities may be represented in a completely connected tree. Justify your answer. (15)

_____