Avinashilingam Institute for Home Science and Higher Education For Women,
Coimbatore – 641 043.
Master's Degree Examination – November 2017
Semester I

Class : I PG **Time : 3 hours**
Major : M.Sc. Information Technology **Max. Marks : 60**

17MITC03 – Design and Analysis of Algorithms

PART – A **10 x 1/2 = 5**

Choose the correct answer

1. Performance measurement is concerned with obtaining the _____ and _____ requirements of a particular algorithm.
   a) space and time b) speed and time
   c) number of lines and time d) space and number of lines.

2. In binary search tree, internal nodes are _____ nodes.
   a) square b) circular c) numbers d) alphabets

3. The traveling salesman problem is to find a tour of _____.
   a) minimum space b) minimum time c) minimum person d) minimum cost

4. Prims algorithm is based on _____ method.
   a) divide and conquer b) dynamic programming c) branch and bound d) greedy

5. A schedule in which the processing of a task on any processor is not terminated until the task is complete is called _____.
   a) preemptive b) non-preemptive c) dynamic d) static

6. Name the node which has been generated but none of its children nodes have been generated in state space tree of backtracking method.
   a) E-node b)dead node c) live node d) state node

7. A round trip path along n edges of the graph, G that visits every vertex once and returns to its starting position is called _____.
   a) Hamiltonian cycle b) bounding c) coloring d) backtracking

8. Which algorithm is used in solving the 8-queens problem?
   a) greedy b) dynamic c) branch and bound d) backtracking

9. Which of the following is true?
   a) P is a subset of NP b) NP is a subset of P
   c) P and NP are equal d) NP is a subset of NP

10. Which design strategy stops the execution when it finds the solution otherwise starts the problem from top?
    a) branch and bound b) divide and conquer c)back tracking d) dynamic programming

PART B

5 x 4 = 20

Answer ALL questions

Each answer should not exceed 200 words or one page

11. a) Exemplify the general method of divide and conquer.

(OR)

b) Explain the factors used to analysis the performance.

12. a) Write short notes on Knapsack problem.

(OR)

b) Describe minimum cost spanning trees.

13. a) Describe the basic method of dynamic programming.

(OR)

b) Write an algorithm for flow shop scheduling.

14. a) Write a note on code optimization.

(OR)

b) Discuss on the fundamentals of Hamiltonian cycles.

15. a) Discuss on the basic concepts of parallel model.

(OR)

b) Explain about parallel complexity.

PART C

5 x 7 = 35

Answer ALL questions

Each answer should not exceed 600 words or three pages

16. a) Explain the algorithm to search an element using Binary Search method with an example.

(OR)

b) Discuss on the Quick Sort algorithm with performance measure and algorithm.

17. a) Write a greedy algorithm to generate shortest path. Give an example.

(OR)

b) Explain optimal merge pattern with an example.

18. a) Elaborate the procedure to solve all pairs shortest paths problem.

(OR)

b) Solve the traveling salesman problem using dynamic programming

19. a) Using backtracking algorithm, find solutions to 8-queen problem.

(OR)

b) Discuss the procedure to solve the sum of subset problem.

20. a) Elaborate the parallel algorithm used for addition and analyze the same.

(OR)

b) Explain about parallel evaluation of general arithmetic expressions.

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