Reg. No. : .....

(6 pages)

Code No.: 6540 **Sub. Code: ZCSM 11**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2021

First Semester

Computer Science - Core

DESIGN AND ANALYSIS OF ALGORITHM

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. ———————— is a finite set of instruction that, it followed, accomplishes a particular task.
   (a) Input (b) Output
   (c) Algorithm (d) Finiteness

2. The number of subtrees of a node is called ————————
   (a) Root (b) Degree
   (c) Terminals (d) Nonterminals

3. The Circular nodes in binary search are called _____

(a) Internal nodes (b) External nodes

(c) Path (d) Siblings

4. In Binary Search the average time required _____

(a) O(log n) (b) log n

(c) O(n) (d) $O(n^2)$

5. _____ is known as greedy algorithm, because it choose at each step the cheapest edge to add to subgraph S.

(a) Kruskal's algorithm

(b) Prim's algorithm

(c) Bellman ford algorithm

(d) Dijkstra algorithm

6. What is the number of edges present in a complete graph having n vertices?

(a) (n*(n+1))/2

(b) (n*(n-1))/2

(c) n

(d) Information given is insufficient

7. Two main measures for the efficiency of an algorithm are ————————

(a) Processor and memory

(b) Time and Space

(c) Complexity and Capability

(d) Data and Space

8. Heap is defined to be a ————————

(a) Complete binary tree

(b) binary tree

(c) tree structure

(d) None

9. Cook Satisfiability is in P if and only if ————————

(a) P=NP (b) P=N

(c) P= N_2 (d) None of the mentioned

10. The time required for nondeterministic algorithm is ————————

(a) O(1) (b) O(n log n)

(c) O(n) (d) O(log n)

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write short notes on Pseudo code Conventions?

Or

(b) Illustrate Stacks with an algorithm?

12. (a) Examine the concept of General Methods in Divide- and-Conquer?

Or

(b) Discuss about Randomized Sorting Algorithms.

13. (a) Give an account of Knapsack Problem.

Or

(b) Determine about Prim's Algorithm.

14. (a) How to construct the Breadth First Search and Traversal?

Or

(b) Discuss about Graph Coloring.

15. (a) Write short notes on FIFO Branch-and-Bound.

Or

(b) Explain the concept of Nondeterministic Algorithms.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Write a brief notes on Algorithm Specification.

Or

(b) Explain the concept of Trees?

17. (a) Elaborate Binary Search with its Algorithm?

Or

(b) Explain in detail about Strassen's Matrix Multiplication?

18. (a) Explain the concept of Job scheduling with deadlines.

Or

(b) Explain in detail about Single Source Shortest Path.

19. (a) Categorize the various Techniques used in Binary Trees.

Or

(b) Write a brief notes on Connected Components and Spanning Trees.

20. (a) Summarize the concept of Job Shop Scheduling?

Or

(b) Discuss in detailed about Cook's Theorem?

———————