(6 pages) Reg. No. : .....

Code No. : 20513 E **Sub. Code : CACA 31**

B.C.A. (CBCS) DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Computer Application – Allied

DATA STRUCTURES

(For those who joined in July 2021–2022)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. A series of statements that do not alter the execution path within an algorithm is _____.

   (a) Sequence

   (b) Selection

   (c) Both (a) and (b)

   (d) None

2. A double hashing method that produces different collision paths for different keys is _____.

   (a) modulo (b) key offset

   (c) probe (d) rehashed

3. When a node contains data about a list, the data are known as _____.

   (a) metadata (b) schema

   (c) ellipses (d) none

4. The most powerful variation of linked list is _____.

   (a) multi linked list

   (b) circularly linked list

   (c) double linked list

   (d) singly linked list

5. _____ adds an item at the top of the stack.

   (a) pop (b) push

   (c) top (d) stack top

6. Create stack initializes _____ for the stack structure.

   (a) data (b) value

   (c) meta data (d) key

7. The _____ of a node is its distance from the root.

   (a) sub tree (b) level

   (c) depth (d) height

8. A _____ tree has the maximum number of entries for its height.

   (a) binary (b) binary search

   (c) complete (d) none

9. An external sort uses _____ memory.

   (a) primary (b) secondary

   (c) both (a) and (b) (d) none

10. Each iteration of the quick sort selects an element is known as _____.

    (a) median (b) pivot

    (c) key (d) value

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Discuss Binary Search with algorithm.

    Or

    (b) Write about ADT. Give an example.

12. (a) Discuss the linear list operations.

    Or

    (b) What is meant by complex linked list? Discuss it.

13. (a) Describe about stack linked implementation.

    Or

    (b) Write an algorithm of ADD, DELETE from a linked STACK.

14. (a) Write about expression trees with an example.

    Or

    (b) Describe about the binary tree traversals.

15. (a) Discuss the basic concepts of sorting.

Or

(b) Describe the operations on graph.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain about algorithm efficiency.

Or

(b) Describe hashed list search with examples.

17. (a) Explain the linked list concepts.

Or

(b) Define circular linked list. Discuss its algorithm.

18. (a) How to evaluate postfix expressions using STACK?

Or

(b) Define queue. Discuss about queue operations.

19. (a) Write the Binary tree representation.

Or

(b) Explain the basic heap algorithm.

20. (a) Write Quick sort algorithm. Explain with example.

Or

(b) What are the external sorts? Discuss any one sort.

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