

B.A/B.Sc. III - Semester Examination

CBS-IIIs/12(R)

229148

Computer Applications

Course No. : UCATC-301

Time Allowed- 3 Hours

Maximum Marks-80

Note: Attempt all questions in Section-A, each question carries 3 marks.

Attempt all questions in Section-B, each question carries 7 marks:

Attempt any 2 questions in Section-C, each question carries 15 marks

SECTION A

(Each question consists of 3 marks)

(3×5=15)

- ✓ 1. Discuss how linear search works.
2. Define heap? What are its types?
- ✓ 3. What is the purpose of a stack in implementing a recursive procedure? Explain.
- ✓ 4. Differentiate between sequential and direct access in a file.
- ✓ 5. Define memory leak and dangling pointer.

SECTION B**(Each question consists of 7 marks)****(7×5=35)**

- ✓6. Describe big-O notation. Write down its characteristics. How it is used to calculate complexity of an algorithm? 5
- ✓7. What is hashing? Discuss various schemes used to handle/resolve collisions. <https://www.jktopper.com>
- ✓8. What is graph? How it is represented in memory? Discuss depth first search traversal with the help of an example.
- ✓9. What is dynamic memory management? Discuss the functions used for dynamic memory management in C?
- ✓10. Analyze the worst case complexity of quick sort algorithm.

SECTION C**(Each question consists of 15 marks)****(15×2=30)**

11. Sort the following numbers using bubble and selection sort: 1, 2, 3, 4, 5, 6. Find the total number of comparisons and number of swapping performed in each case.
- ✓12. Describe the various file organizations along with their advantages and disadvantages. 15

- ✓13. Discuss in order, pre order and post order traversal of a binary tree. Construct the tree whose pre order and in-order are given:

Pre order: I F C B A E D H J G

In order: C F A B I D H J E G

Answer the following for the constructed tree:

- a) What is the post- order traversal?

- 6
✓14. What are the various limitations of linear queue? Write an algorithm to insert and delete an element from a circular queue.

15. Write an algorithm to find the following on doubly link list (with integer value as data part). <https://www.jktopper.com>

- Number of nodes with even value.
- Inserting node with value 5 at beginning.
- Searching particular element in the list.

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