9:31 PM 54

1483/III

B.C.A. (Part-II) Examination, 2021-2022

(Third Semester)

(BCA 303 : DATA STRUCTURE)

Paper : III

Time: Three Hours] [Maximum Marks: 70

Note: (i) Answer **five** questions in all.

(ii) Question No. **1** is **compulsory.**

(iii) Answer remaining **four** questions, selecting **two** from each Section **A** and **B.**

(iv) All questions carry equal marks.

learn with Fz

1. Answer **all** part of the following in brief:

(a) What do you mean by data structure?

(b) Describe operation of data structure.

(c) Define algorithm with example.

(d) How do we do complexity analysis of an algorithm?

SECTION–A

2. What is array in data structure? Explain multidimensional array and its implementation.

3. Explain linked list with giving examples. Discuss various types of linked list.

4. What do you mean by stack? Describe the operation on stack with algorithm.

5. Differentiate between tree and graph with

9:32 PM 4G+ 54

SECTION–A

2. What is array in data structure? Explain multidimensional array and its implementation.

3. Explain linked list with giving examples. Discuss various types of linked list.

4. What do you mean by stack? Describe the operation on stack with algorithm.

5. Differentiate between tree and graph with explaining different terminologies used for tree.

SECTION–B

6. (a) Explain Binary search with algorithm.

   (b) Write an algorithm of Bubble sort.

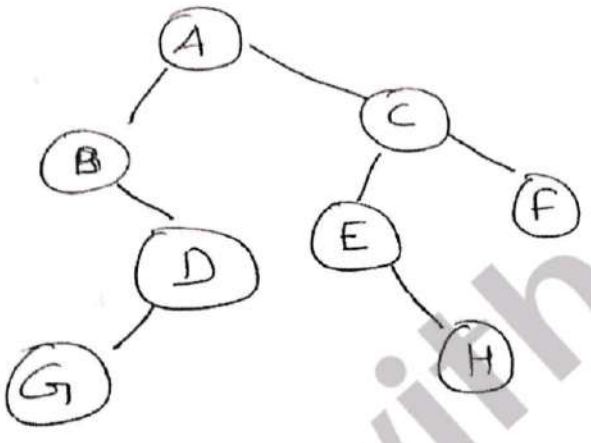
7. (a) Convert Prefix to infix

   + - * AB/CDE

   (b) Write down the application of stack with example.

8. (a) Give the various traversals of Binary tree.

   (b) Write down pre-order, in-order and post order traversal of following Binary tree:



learn with FZ

9:32 PM

6. (a) Explain Binary search with algorithm.

(b) Write an algorithm of Bubble sort.

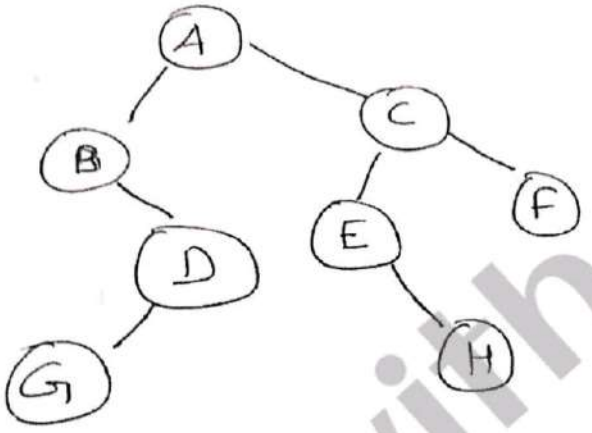
7. (a) Convert Prefix to infix

+ - * AB/CDE

(b) Write down the application of stack with example.

8. (a) Give the various traversals of Binary tree.

(b) Write down pre-order, in-order and post order traversal of following Binary tree:



9. Write notes on any **two** of the following:

(a) Difference between BFS and DFS graph traversal.

(b) Sorting

(c) Difference between D-Queue and priority queue.

••••

learn with FZ

1483/III

B.C.A. (Part-II) EXAMINATION, 2022-23

(Third Semester)

9227

(BCA 303 : DATA STRUCTURE)

Paper : III

Time : Three Hours] [Maximum Marks :70

Note: **(i)** Answer **Five** Questions in all.

(ii) Question **No. 1** is compulsory.

(iii) Answer remaining **four** questions, selecting **two** from each Section **A** and **B**.

(iv) All questions carry equal marks.

1. Answer all parts of the following in brief:

(a) Differentiate between Primitive and Non Primitive data structure.

(b) Consider A[5____50], base address 300, size of element is 4 byte. Then find the address of A[15].

(c) Describe the application of Array.

(d) Define Stack and its features.

Section-A

2. What is Sparse Matrix in Data Structure? Explain Sparse Matrix representation with suitable examples.

3. Write Infix to Postfix Algorithm and Convert the following from Infix to Postfix using Stack-

$$a + (b + c * d + e) + f/g$$

4. Solve the following Queue operation step by step using array representation, where array size is 5.

(i) empty,

(ii) insert A, B, C

(iii) delete A,

(iv) insert D, E

(v) delete B, C

(vi) insert F

(vii) delete D

(viii) insert G, H

(ix) delete E

(x) delete F

(xi) insert K

(xii) delete G, H

(xiii) delete K

5. What do you mean by Polynomial representation in Linked List? Also perform the Addition of polynomial expression using Linked list –

$$p(1) = 13x^8 + 7x^5 + 32x^2 + 54$$

$$p(2) = 3x^{12} + 17x^5 + 3x^3 + 98$$

Section-B

6. (a) Given Matrix A[4][5], base address 1020, size of element 2 byte, find the address of A[3][4], using row major and column major representation.

(b) Explain generalized linked list. Perform the following operation using generalised linked list:

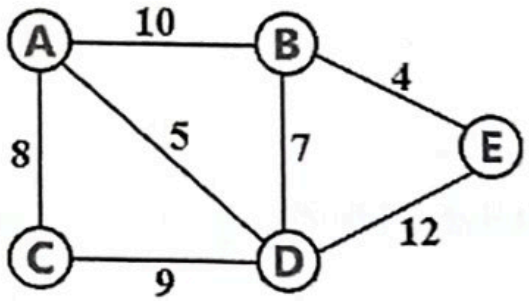
$$p, q(r, s(t, u, v)\ w)x, y)$$

7. (a) Write Prim's Algorithm with suitable examples.

(b) What is searching? Explain Linear Search with algorithm and suitable examples.

8. (a) Explain Binary Tree. Discuss various types of Binary Tree.

(b) Write down Graph Representation in memory. Perform the Operation in following undirected weighted graph using sequential representation (2D-Array).



9. Write notes on any two of the following:

(a) Terminologies of Graph

(b) PUSH and POP Algorithm.

(c) Difference between Array and Linked List.

••••

1483/III

BCA (Part-II) (III[rd] Semester) Examination, 2023-24

1328

(BCA 303 : Data Structure)

Paper : III

Time : Three Hours] [Maximum Marks :70

Note: (i) Answer **five** questions in all.

(ii) Question No. **1** is **compulsory.**

(iii) Answer remaining four questions, selecting **two** from each Section **A** and **B**.

(iv) All questions carry equal marks.

1. Answer all parts of the following: -

(a) Define Abstract data types.

(b) What are the differences between primitive and non-primitive data structures?

(c) Explain the conditions to check whether a circular queue is full as well as empty.

(d) Consider A [5.....50] base address 300, size of element is 4 bytes.

the find the address of A [15] in C.

Section-A

2. Show the steps of evaluating a postfix expression as give: -

   5 , 6 , 2 , + , * , 12 , 4 , /, -

3. What is Sparse Matrix in data Structure? Explain Sparse Matrix representation with Suitable example.

4. Solve the following Queue operations step by step using array representation where array size is 5.

(i)	empty	(ii)	insert A, B, C
(iii)	delete	(iv)	insert D, E
(v)	delete B, C	(vi)	insert F
(vii)	delete D	(viii)	insert G, H
(ix)	delete E	(x)	delete F
(xi)	insert K	(xii)	delete G, H
(xiii)	delete K		

5. For the tree below. Write the in order. pre-order, post-order traversal

Section-B

6. (a) Write a Kruspal's algorithm with suitable example.

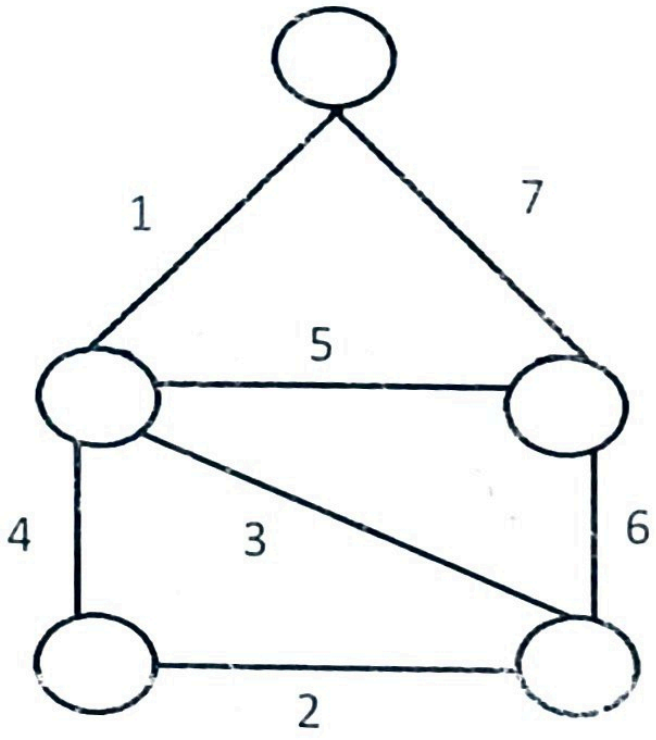
(b) Sort the given array elements using selection Sort:-

12	29	25	8	32	17	40

7. (a) Explain Binary Tree. Discuss various types of Binary Tree.

(b) Write the algorithm to implement DFS and BFS traversal.

8. (a) What is the minimum cost spanning tree for the give graph:



(b) Give the memory representation of the Graph.

9. Write notes on <u>any two</u> of the following: -

(a) PUSH and POP Stack operations.

(b) Tree Terminologies.

(c) Linear Search.

(d) Difference between Array and Linked List.

••••