(Pages : 3) G – 2690

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

Career Related FDP under CBCSS

Computer Science

CS 1241 — DATA STRUCTURES IN C

(2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries 1 mark.

1. What is deque?
2. Explain Quick sort algorithm.
3. What is simulation?
4. Explain Single Linked list.
5. What is dynamic memory location?
6. What is PUSH POP operation on Stack?
7. Explain are different notations of arithmetic expression.
8. Explain deletion operation in tree.
9. Explain threaded binary tree.
10. What is a bio connectivity?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** questions, not exceeding a paragraph of 50 words.

11. What is the function used to adjust the size of dynamic memory block?

12. Write a algorithm for inserting an element into queue.

13. Explain Linear hashing.

14. Explain Factorial calculation using stack.

15. How to implement get and free node operation.

16. Explain open Hasing.

17. Describe mid square method.

18. Explain Huffman tree.

19. Explain representation of linked list in memory.

20. Explain Konigsberg bridge.

21. Explain Digraph.

22. Write about set representation of graph.

(8 × 2 = 16 Marks

SECTION – C

Answer any **six** questions, in a paragraph of 100 words.

23. Explain time complexity and space complexity.

24. Explain Circular queue with an example.

25. Explain selection sort with example.

6. What is a non linear data structure? What are the key differences compared to linear data structure?

27. Explain operation on a linked list.

28. What is a dangling pointer? Explain.

29. How can you insert new node into Binary tree? Explain.

30. What are the applications of a queue?

31. Describe various file organisations.

SECTION – D

(6 × 4 = 24 Marks)

Answer any **two** questions, not exceeding 4 page.

32. Explain various queue structure with examples.

33. What are the application of linked list? Give examples.

34. What are the operations for tree insertion and deletion with examples?

35. Explain about minimum spanning tree. Which are the algorithms used for this?

(2 × 15 = 30 Marks)

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No. : .....

Name : .....

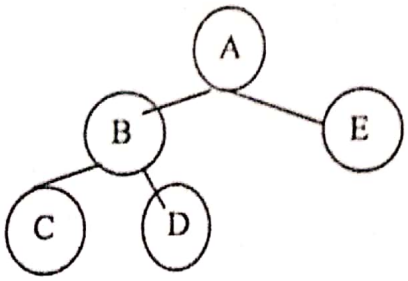
Second Semester B.Sc./BCA Degree Examination, August 2018
Career Related FDP under CBCSS
Group 2 (b) – COMPUTER SCIENCE / COMPUTER APPLICATIONS
CS 1241/CP 1243
Data Structures
(2014 Admission Onwards)

Time : 3 Hours Max. Marks : 80

PART A (Very Short Answer Questions)

Answer **all** questions. **Each** question carries **1** mark.

1. Define linear data structure.
2. Define the term array.
3. Write syntax to define a structure in C.
4. What do you mean by stack ?
5. What is the use of queue ?
6. What is a linked list ?
7. Write complexity of insertion sort algorithm.
8. Name any two non linear data structures.
9. Draw post order traversal of the given binary tree.



10. Define the term Polish notation.

(10×1=10 Marks)

P.T.O.

PART – B (Brief answer questions)

Answer **any eight** questions. **Each** question carries **2** marks.

11. Differentiate static and dynamic data structures.
12. Define height of a binary tree.
13. What are the advantages of linked list over array ?
14. Mention few applications of stack.
15. What do you mean by collision ?
16. What is an expression tree ?
17. Write algorithm to perform exchange sort.
18. Define Binary Search Tree.
19. Define the term weighted graph.
20. What is a circular linked list ?
21. Distinguish between dynamic and static memory allocation.
22. What is a Graph ?

(8x2=16 Mark

PART C (Short Essay Type Questions)

Answer **any six** questions. **Each** question carries **4** marks.

23. Discuss the methods of two dimensional array representation in memory.
24. Write short note on doubly linked list.
25. Explain push operation to stack using array.
26. Convert the following expression to polish form
    A+B–C*D/(E–F)
27. What is the use of binary search tree ?
28. Explain various applications of binary trees.

Explain selection sort with suitable example.

Write a note on DFS.

Compare linear and binary search techniques. **(6×4=24 Marks)**

PART – D (Long essays)

nswer **any two** questions. **Each** question carries **15** marks.

. Explain various operations on linear linked list.

. Explain implementation of linear queue using arrays. Explain its operations.

4. Explain binary tree traversal with suitable examples.

5. Write short note on various hashing techniques. **(2×15=30 Marks)**

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Reg. No. : .....

Name : .....

Second Semester B.C.A. Degree Examination, May 2019

Career Related FDP Under CBCSS

Group 2(b) – Computer Applications

CP 1243 : DATA STRUCTURES

(2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** marks.

1. Define linked list.

2. State whether True or False: The size of a tree is equal to the total number of nodes.

3. A graph with multiple edges and/or a loop is called a ————

4. What is hash table?

5. Degree of a leaf node is ————

   (a) 0 (b) 1 (c) 2 (d) 3

6. A line in a grocery store represents a

   (a) Stack (b) Queue (c) Linked List (d) Array

P.T.O.

7. Stack is a _____

(a) LIFO (b) FIFO (c) FILO (d) LILO

8. In a circular linked list, the last node contains a pointer to the _____ node of the list.

9. State whether True or False: A binary tree of n nodes has exactly n-1 edges.

10. The process of examining memory locations in a hash table is called.

(a) Hashing (b) Collision (c) Probing (d) Addressing

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks.

11. Give the structure of a node in a linked list.

12. What are directed graphs?

13. Express (A + B) * C in Polish notation.

14. Give the algorithm for traversing a linked list

15. Distinguish between static and dynamic data structures.

16. What is linear hashing?

17. What is a deque?

18. What is a doubly linked list?

19. List the ways in which graphs are represented in memory.

20. What is a hash function? Give the properties of a good hash function

21. Differentiate between internal sorting and external sorting.

22. Define forest.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks.

23. Give the Algorithm to search for a given value in a binary search tree.

24. What do you mean by O notation? Give the complexity of Linear Search Algorithm.

25. Differentiate between Linked Lists and arrays.

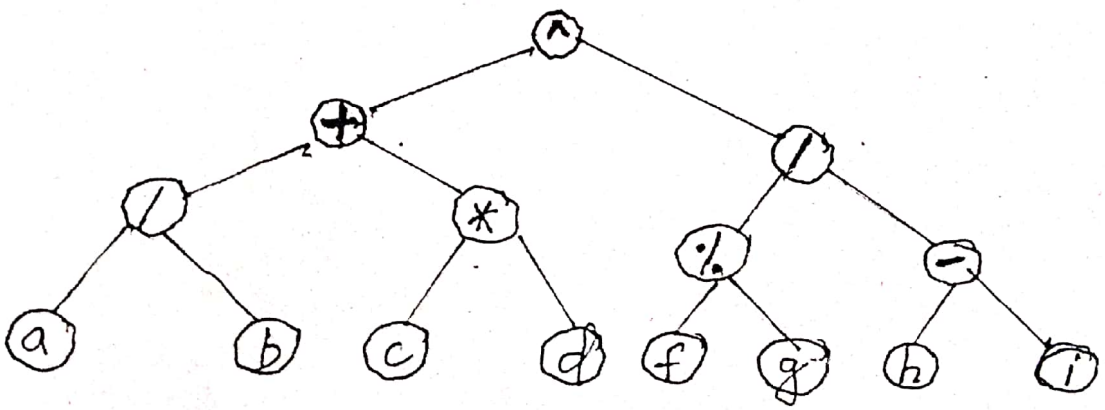
26. Explain the rules for ceating a binary tree from a genetal tree.

27. Compare selection sort and bubble sort.

28. Describe the PUSH and POP operations.

29. Distinguish between linear and nonlinear data structures.

30. Given the binary tree, write down the expression that it represents.



31. How does bubble sorting work? Give algorithm.

(6 × 4 = 24 Marks)

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Reg. No. : .....

Name : .....

Second Semester B.Sc./B.C.A. Degree Examination, July 2017
Career Related FDP Under CBCSS
Group 2(b) : Computer Science / Computer Applications
CS 1241/CP 1243 : DATA STRUCTURES
(2014 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A
[Very Short Answer type]

One word to maximum of **one** sentence, Answer **all** questions. **(10×1=10 marks)**

1. What is an array ?
2. Give any one application of linked list.
3. What is stack ?
4. What is the advantages of postfix notation ?
5. What is a linear data structure ?
6. What do you mean by an expression tree ?
7. What do you mean by complexity of an algorithm ?
8. What do you mean by hashing ?
9. What do you mean by a walk in a graph ?
10. Define DFS.

P.T.O.

SECTION – B
(Short Answer)

Not to exceed **one** paragraph. Answer **any eight** questions. **Each** question carries **two** marks. **(8x2=16 marks)**

11. How will you pass structures as arguments to functions ?
12. What is a linked list ? How will you add a node at the end of a singly linked list ?
13. What is the difference between doubly and circular linked list ?
14. Write an algorithm to evaluate postfix expression using a stack.
15. Differentiate between Polish and Reverse polish notations with suitable examples.
16. Explain dequeue, in brief.
17. Differentiate between level and depth of a tree, with suitable examples.
18. What do you mean by a complete binary tree ? Give an example.
19. Write an algorithm to perform binary search.
20. Explain linear hashing.
21. Write an algorithm for insertion sort.
22. Write short note on graphs and its applications.

SECTION – C
(Short Essay)

Not to exceed **120** words. Answer **any six** questions. **Each** question carries **four** marks. **(6x4=24 marks)**

23. Write an algorithm to append two arrays into a single array.
24. What are the advantages of dynamic data structures ? How will you represent a polynomial using a linked list ?
25. Write an algorithm to perform PUSH and POP operations in a stack.

6. How will you perform insertion and deletion in a queue ? Explain.

7. Explain doubly linked lists in detail.

8. Explain binary tree traversal algorithms ?

9. Explain collision handling techniques in hashing, in detail.

30. Write an algorithm to perform selection sort.

31. How will you perform breadth first search in a graph ? Explain.

SECTION – D
(Long Essay)

Answer **any two** questions. **Each** question carries **fifteen** marks. **(2×15=30 marks)**

32. What is double hashing ? Explain with suitable example.

33. Write program snippets for implementing the following :
    a) Insert a node into a binary tree, using pointers.
    b) Search a node from a binary tree, using pointers.
    c) Delete a node from the binary tree, using pointers.
    d) In-order binary tree traversal, using pointers.

34. Write program snippets for implementing the following operations on linked list : insertion, deletion and traversal.

35. Define a graph. What are the different representations of a graph ? Find breadth-first and depth-first search traversal for the following graph.