(Pages : 2)

E – 4576

Reg. No. : ....

Name : ....

Second Semester B.Sc. Degree Examination, August 2018
Career Related FDP under CBCSS
Group 2(b) : COMPUTER SCIENCE
CS 1241 : Data Structures
(2013 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. What is meant by data type ?
2. Name any two non linear data structures.
3. What is a node in linked list ?
4. What is a binary tree ?
5. Which field is used to distinguish records in a file ?
6. What will be the degree of a terminal node ?
7. Give an example for static data structure.
8. What is flowchart ?
9. What are the possible values of a Boolean expression ?
10. In a stack, where will be done all insertions and deletions operations ?

(10×1=10 Marks)

SECTION – B

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

11. Define algorithm.
12. What is a stack ?
13. Define data structure.
14. What are the differences between an array and a linked list ?

P.T.O.

15. Write about FIFO and LIFO data structures.
16. What is polish notation ? Give example.
17. How can an array be passed as an argument to a function ?
18. What is a doubly linked list ?
19. What is a structure ? How are the members accessed ?
20. What is a hash function ?
21. Write about 1-dimensional and 2-dimensional arrays.
22. What do you mean by priority queue ? **(8×2=16 Marks)**

SECTION – C

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

23. *How is a binary search different from sequential search ? Which one is better to search an ordered sequential file and why ?*
24. *What do you mean by O notation ?*
25. Describe the differences between binary and text files.
26. Write notes on binary expression tree.
27. Compare selection sort and insertion sort.
28. Describe the PUSH and POP operations.
29. Distinguish between static and dynamic memory allocation.
30. Write an algorithm to find the factorial of a number entered by the user.
31. The preorder traversal of a binary search tree is 10, 5, 1, 7, 40, 50. Construct the BST. Find the inorder and post order traversals. **(6×4=24 Marks)**

SECTION – D

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

32. What do you mean by graph traversal ? Describe the two graph traversal algorithms.
33. Describe various types of data structures with suitable examples.
34. Discuss the basic operations on a queue.
35. What is a circular list ? Write an algorithm to insert node P to the right of node X in doubly linked list. **(2×15=30 Marks)**

(Pages : 3) **C – 4344**

Reg. No. : ....

Name : ....

Second Semester B.Sc. Degree Examination, July 2017
(Career Related First Degree Programme under CBCSS)
Group 2(b) : Computer Science
Core Course
CS 1241 : DATA STRUCTURES
(2013 Admn.)

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 a queue ?
2. What is merging algorithm ?
3. Define the term binary search tree.
4. What is doubly linked list ?
5. What is a stack ?
6. What is a two dimensional array ?
7. What is searching algorithm ?
8. Define the term deleting.
9. What are the different types of binary tree traversing ?
10. What is a pointer ?

P.T.O.

SECTION – B
(Short answer)

Not to exceed **one** paragraph, answer **any eight** questions. **Each** question carries **two** marks. **(8×2=16 Marks)**

11. What is meant by traversal of trees ?
12. Write the applications of queue.
13. Explain multi-dimensional arrays.
14. What are the different queue operations ?
15. Describe time complexity.
16. What is a text file ?
17. What is a *pop* operation in stack ?
18. Define *inorder* traversing.
19. What are the properties of trees ?
20. What is the worst and average case of selection sort algorithm ?
21. Write an algorithm to delete an element from a queue.
22. What is a header linked list ?

SECTION – C
(Short essay)

Not to exceed **120** words, answer **any six** questions. **Each** question carries **four** marks. **(6×4=24 Marks)**

23. Define sorting. Explain selection sort algorithm.
24. Explain the representation of two-dimensional array in memory.
25. Explain operations on linked list.
26. Explain the representation of linear arrays in memory.
27. Explain structure with example.

28. Explain the transform of Infix into Postfix expression.

29. Explain linked representation of binary trees.

30. Explain BFS algorithm.

31. Explain Garbage collection with help of diagram.

SECTION – D
(Long essay)

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

32. Explain and compare linear search and binary search algorithms.

33. Explain different tree traversal methods with example.

34. Explain the applications of stack.

35. Write a short note on :

    a) Adjacency matrix

    b) Binary search tree.

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(Pages : 3)

Reg. No. : ....008.........

Name : ....Gousi.........

Second Semester B.Sc./B.C.A. Degree Examination, July 2016
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

SECTION – A

(Very Short Answer Type)

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

1. Define a linked list.
2. What do you mean by a pointer ?
3. What is a dynamic data structure ?
4. Convert the infix expression (A + B) * C – (D – E) * (F + G) to prefix.
5. What do you mean by a non linear data structure ?
6. Define a stack.
7. What do you mean by time complexity of an algorithm ?
8. What is a hash function ?
9. What do you mean by a cycle in a graph ?
10. Define indegree of a node in a directed graph.

P.T.O.

SECTION – B

(Short Answer)

Not to exceed **one** paragraph. Answer **any eight** questions. **Each** question carries **two** marks. **(8×2=16 Marks)**

11. What is the advantage of dynamic data structure over static data structure ?
12. Write short note on circular linked lists.
13. Explain the concept of one dimensional array.
14. Explain PUSH and POP operations in a stack.
15. Differentiate between prefix and postfix notations.
16. Write short note on priority queues.
17. Define level, depth, leaf and root of a tree.
18. What do you mean by a binary search tree ? Give an example.
19. Write short note on expression trees.
20. What do you mean by hashing ? Explain its advantages over ordinary searching techniques.
21. Discuss the best, average and worst case of linear searching technique.
22. Write short note on isomorphic graphs.

SECTION – C

(Short Essay)

Not to exceed **120** words. Answer **any six** questions. **Each** question carries **four** marks. **(6×4=24 Mar**

23. Write an algorithm to perform bubble sorting an array of numbers.
24. Explain various operations performed on a singly linked list.
25. Explain the representation of polynomials using linked list.

for(c=0; c<n-1; c++)
(d=0; d<c-n-1, d+

26. Write an algorithm to convert an infix expression to postfix using a stack.

27. How will you perform insertion into a binary search tree ?

28. Explain the binary tree traversal algorithms using recursion.

29. Explain collision handling techniques in hashing.

30. Write an algorithm to perform binary search.

31. Explain the algorithm for brea [redacted] h in a graph with suitable example.

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Reg. No. : ...32014808010.....

Name : ...Arpitha R...................

Second Semester B.Sc. Degree Examination, July 2015
Career Related FDP under CBCSS
Group 2(b) Computer Science
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 the need of data structure ?
2. How many number of elements are in array A [–1 : 2, 2 : 6] ?
3. What will be the postfix equivalent of the infix expression (a + b) * (c – d) ?
4. What are linear data structures ?
5. How many link fields are there in doubly linked list ?
6. What is binary search tree ?
7. What is the number of possible ordered trees with 3 nodes A, B, C ?
8. Name the different searching methods.
9. Hash tables are ideal for which type of data structure ?
10. What is the use of graphs ?

P.T.O.

SECTION – B

(Short Answer)

(**Not** to exceed **one** paragraph. Answer **any eight** questions. **Each** question carries **two** marks.) **(8×2=16 Marks)**

11. Mention the drawbacks of arrays.
12. Explain about dynamic storage management.
13. Differentiate doubly linked list and singly linked list.
14. What are the drawbacks of sequential data structure ?
15. Explain multiple stacks and queue.
16. Explain circular queue.
17. What is a pointer ?
18. List the different tree traversing methods.
19. Describe the structure of linked list. Write an algorithm to insert an element at the beginning of the linked list.
20. Explain bubble sort with an example.
21. Write the two standard ways of traversing a graph.
22. Explain breadth first traversal of graphs.

SECTION – C

(Short Essay)

(**Not** to exceed **120** words. Answer **any six** questions. **Each** question carries **four** marks.) **(6×4=24 Marks**

23. Explain various implementation of stacks in memory.
24. How insertion done in circular queue ? Explain.

25. Explain the implementation of linked list by pointers.

26. Write an algorithm to implement the basic queue operations using arrays.

27. Draw the tree T for the following expression and find the pre-order, in-order and post order of T.

$E = [a + (b - c)] * [(d - e)/(f + g - h)]$

28. Discuss the features of binary search operation.

29. Explain polish notation.

30. Briefly explain some of the methods of obtaining hash functions.

31. What are the different file organizations ? Explain each.

SECTION – D

(Long Essay)

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

32. Explain different types of data structures.

33. Explain how insertion and deletion done in singly linked list. Explain with example.

34. Explain the different operations performed on stack and show how the expression

$X = ((4 - 5) * (9 * 5)$ is evaluated in stack.

35. Discuss the applications of binary trees with example.

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Reg. No. : ....

Name : ....

Second Semester B.Sc. (Computer Science) Degree Examination, July 2015
(Career Related FDP under CBCSS)
Group 2(b)
Core Course : CS 1241 : DATA STRUCTURES

Time : 3 Hours Max. Weights : 30

SECTION – A

This Section contains **four** bunches of each of **four** questions. Answer **all** questions. **Each** bunch carries a weightage of **one**.

I. 1) Syntax for declaring a pointer variable is

a) data type * variable name;
b) data type variable name * ;
c) data type variable name
d) none of these

2) Which of the following statement is used to initialize an integer array

a) a[] = {4, 5, 6, 7}
b) a[] = {'1', '2', '3', '4'}
c) a[] = {4:5:6:7}
d) none of these

3) Which of the following is linear data structure ?

a) tree
b) graph
c) array
d) none of these

4) Which of the following operator is used for getting address of an integer variable ?

a) &
b) !
c) ||
d) ~

II. 5) Which of the following data structure is most suitable for post fix evaluation ?

a) stack
b) linked list
c) queue
d) tree

6) int a[2][3] = {1, 2, 3, 4, 5, 6, 7}. What is the value of a [0][2] ?

a) 2
b) 3
c) 5
d) 6

7) What data structure provide flexibility in adding, deleting rearranging data items at runtime ?

a) dynamic b) static c) non linear d) none of these

8) Which of the following data structure most suitable for representing polynomial ?

a) stack b) queue c) linked list d) tree

III. 9) Which of the following is/are non linear data structure ?

a) graph b) tree c) a and b d) stack

10) To get element in ascending order which of the following traversal can be done in binary search tree ?

a) inorder b) preorder c) post order d) none of these

11) What is the visiting order of preorder traversal ?

a) Root Left Right b) Left Right Root

c) Right Root Left d) Left Right Root

12) A binary tree can contain

a) exactly two children b) at most two children

c) at least two children d) only one children

IV.13) Which of the following data structure is most suitable for implementing DFS traversal ?

a) Stack b) Queue c) Linked list d) Tree

14) Which of the following shows correct relationship ?

a) O(1) < O (log N) < O(N) < O(N log N)

b) O(log N) < O(N) < O(N log N) < O(1)

c) O(N log N) < O(log N) < O(N) < O(1)

d) (N log N) < O(log N) < O(1) < O(N)

15) f(n) is of the order of g(n) if there exist positive integers a and b such that

a) f(n)<=a* g(n) for all n>=b b) f(n)<=a* g(n) for all n<=b

c) f(n)<=a* g(n) for all n=b d) none of these

16) Order of binary search algorithm in sorted array

a) O(1) b) O(N) c) O(log N) d) O(N log N)

(4×1=4 Wts.)

SECTION – B

Short answers. Answer **any eight** questions.

17) Let a be an integer array. What are the two methods to find address of first element of array ?
18) What do you mean by structure ?
19) Give two example for linear data structure.
20) Compare singly and doubly linked list.
21) Write an algorithm for push operation in stack.
22) How can you represent polynomial using linked list ?
23) The maximum number of nodes in a binary tree of depth k is ____________ Explain with an example.
24) What do you mean by binary search tree ?
25) What are the three traversal in binary tree ?
26) Write algorithm for linear search.
27) What are the two traversal methods in graph ?
28) What do you mean by best case efficiency and worst case efficiency ?

(8×1=8 Wts.)

SECTION – C

Short essay/paragraph. Answer **any five** questions.

29) Write an application program to accept rollno, name, mark of three subjects of n students and display details in proper format with total.
30) What are the different modes to open a file ?
31) Write an algorithm to traverse a singly linked list.
32) Write an C++ program to implement stack using array.
33) Draw expression tree for expression ((A + B) * (C + D * E).

34) Write recursive algorithm to perform preorder traversal in binary tree.

35) What do you mean by Big O notation ?

36) What do you mean by strongly connected graph ? **(5×2=10 Wts.)**

SECTION – D

Answer **any two** questions.

37) What do you mean by BFS and DFS traversal ? Explain with an example.

38) Write program to add two polynomial using linked list.

39) What are the two methods to represent a tree using data structure ?

(2×4=8 Wts.)

(Pages : 3)

E – 4595

Reg. 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)

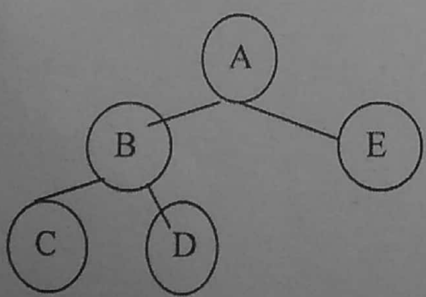
Time : 3 Hours

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.

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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 ?

(8×2=16 Ma

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.

29. Explain selection sort with suitable example.
30. Write a note on DFS.
31. Compare linear and binary search techniques. **(6×4=24 Marks)**

PART – D (Long essays)

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

32. Explain various operations on linear linked list.
33. Explain implementation of linear queue using arrays. Explain its operations.
34. Explain binary tree traversal with suitable examples.
35. Write short note on various hashing techniques. **(2×15=30 Marks)**

(Pages : 3) **3347**

Reg. No. : ....

Name : ....

Second Semester B.Sc. (Computer Science) Degree Examination, July 2014
(Career Related First Degree Programme Under CBCSS)
Group 2 (b)
Core Course
CS 1241 : DATA STRUCTURES
(2013 Admn.)

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. Define the asymptotic big-Oh notation.
2. Define an algorithm.
3. What is meant by time complexity ?
4. Define Huffman algorithm.
5. What is a one dimensional array ?
6. Define Traversing.
7. What is the worst-case complexity of linear search algorithm ?
8. What is a tree ?
9. What is a priority queue ?
10. What are binary tree representation methods ?

SECTION – B
(Short Answer)

Not to exceed **one** paragraph. Answer **any eight** questions. **Each** question carries **two** marks. **(8×2=16 Marks)**

11. What are the applications of stack ?

12. What is a sparse matrix ?

13. Describe space complexity.

14. Describe multi-dimensional arrays.

15. What are data structure operations ?

16. Describe the time complexity of algorithms.

17. What is a binary tree ?

18. What is a binary file ?

19. What is *push* operation in stack ?

20. What is a pointer ?

21. Define *preorder* traversing.

22. What is a connected graph ?

SECTION – C
(Short Essay)

Not to exceed **120** words. Answer **any six** questions. **Each** question carries **four** marks. **(6×4=24 Marks)**

23. Define searching. Explain [redacted]