COA 202.1 **Reg. No. ……**

CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION
APRIL 2013
B. C. A.

ADVANCED PROGRAMMING IN 'C' AND DATA STRUCTURES

Time: 3 Hrs **Max. Marks: 80**

PART – A

1. Answer any ten questions from the following: **10x2=20**

a) How can a pointer variable be initialized? Give example.
b) What is the output of the following code.

```
Int *p, m=100;
p=&m;
printf ("%d",(*p)++);
printf ("%d", *p);
```

c) Write the importance of using a file.
d) Write syntax of fopen( ) and give an example.
e) What is the usage of EOF?
f) Why malloc( ) is used? Give its syntax.
g) Write the memory representation of stack.
h) What is a priority queen? Explain.
i) Write the postfix form of the following infix expression (x+y/z*w)-R
j) Define the following terms with respect to a binary tree (i) root (ii) Degree of a tree
k) Write any two advantages of doubly linked list.
l) Write the formula to locate a particular element in a one dimensional array.

PART – B

Answer any TWO questions from each unit.

UNIT – I

2. a) Write a note on pointer to an array.
b) Write a program to exchange the values of two variables using pointers and functions.
c) Why realloc( ) is used? Write its syntax. **(4+4+2)**

3. a) Explain pointer to srings with suitable example.
   b) Write a program to calculate students' total marks and grade using pointers to structures which holds rollno, name and marks in three subjects. **(5+5)**

4. a) Explain array of pointers with an example.
   b) How pointer variables can be used in expressions.
   c) Explain calloc( ) with a example. **(4+3+3)**

UNIT – II

5. a) How can we open a file? Explain the different modes of opening a file.
   b) Distinguish between
      (i) Primitive and non-primitive data structures
      (ii) Stack and Queue
   c) Write the importance of closing a file. **(4+4+2)**

6. a) With a suitable example, explain commandline arguments.
   b) Write an algorithm to perform circular Queue operations. **(5+5)**

7. a) Wrote a program to append content of one file to the end of another.
   b) What are the different operations performed on stack? Explain the steps involved in each operation. **(5+5)**

UNIT – III

8. a) What is a linked list? Explain different types with a neat diagram.
   b) Write an algorithm to search for an element in a linked list. **(5+5)**

9. a) Explain the steps to evaluate the postfix expression.
   b) Write an algorithm for inorder and postorder traversal of a binary tree. **(5+5)**

10. a) Draw a binary tree for the given tree traversal

Inorder	:	5	7	8	9	10	11	12	15	25
Preorder	:	10	8	5	7	9	12	11	15	25

   b) Write an algorithm to delete the last node from doubly linked list. **(5+5)**

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Time: 3 Hrs Max. Marks: 80

PART – A

1. Answer any TEN questions from the following: 10x2=20

a. Give the formula to find the address of a particular location in an array.
b. What is a circular linked list?
c. What do you mean by descending priority queue?
d. Give the posfix form of A – B/C * D^E
e. What is the advantage of linked list?
f. Define the following binary tree terminology.
   i) leaf node ii) root
g. What is the difference between ' * ' and '&'?
h. What do you mean by non-linear data structure?
i. Mention any two advantages of doubly linked list.
j. How is a file declared? Explain with an example.
k. Why is the 'w' mode and 'r' mode used with opening a file?
l. Give the c structure definition of a queue.

PART – B

Answer any TWO questions from each unit:

UNIT – I

2. a. What do you mean by array of pointers? What is the difference between pointer of an array and array of pointers?
b. Write a program to add two matrices using pointers. **(5+5)**

3. a. Explain dynamic memory allocation functions with syntax and examples.
b. Write a program to sort an array using pointers. **(5+5)**

4. a. Explain how to access structures using pointers with the help of an example.

b. Write a program to exchange the values using pointers and functions. **(5+5)**

UNIT – II

5. a. Explain the following functions.
i) putc ii) getw iii) fprintf
b. Write an algorithm to match nested parenthesis in an expression using stack. **(6+4)**

6. a. What are command line arguments? Explain.
b. Evaluate the following postfix expression using stack. Also explain each step.
10 4 - 3 2 ^ * 3 / 7 **(4+6)**

7. a. Write a C function to accomplish the following stack operation:
i) pop( ) ii) stack-empty( ) iii) stack-full( )
b. Explain the need for circular queues with the help of an example. **(6+4)**

UNIT – III

8. a. Explain linked implemention of stacks.
b. Explain the various binary tree traversal techniques with a suitable example. **(4+6)**

9. a. With examples, explain the two methods of binary tree representation.
b. Write an algorithm to delete a node from a doubly linked list. **(5+5)**

10. a. What is a sparse matrix? How to implement a sparse matrix using linked list?
b. Write an algorithm to delete an element from a circular linked list. **(5+5)**

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COA 202.2 Reg. No.
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CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION
APRIL 2015
B.C.A
ADVANCED PROGRAMMING IN C AND DATA STRUCTURES

Time: 3 Hrs **Max. Marks: 80**

PART – A

1. Answer any TEN questions from the following: **10×2=20**

a. Write the importance of using a file.

b. What is the output of the following code?

```
int *p,m = 100
p = &m;
printf("%d",(*p)++);printf("%d",*p);
```

c. What is dynamic money allocation? Give two commands for dynamic memory allocation.

d. What is priority queue?

e. What is the use of EOF ()?

f. What is a file?

g. What is FIFO and LIFO?

h. Define circular linked list.

i. Write any two applications of a binary tree.

j. Define the terms: i) root ii) degree of a tree.

k. Write the formula to locate a particular element in one dimensional array.

l. Write any two advantages of doubly linked list.

PART – B

Answer any TWO questions from each unit:

UNIT – I

2. a. Write a note on pointer expression.

b. Explain the following file related functions with syntax and example.
i) fopen ii) getw iii) fclose iv) fscanf v) fprintf **(5+5)**

3. a. What do you mean by command line arguments? How to access them in the main program? Explain with an example.

b. Explain the pointer to strings with suitable example. **(6+4)**

4. a. Write a program to calculate the students' total marks and grade using pointers to structures which holds rno, name and marks in three subjects.

b. Differentiate between
i) puts() and fputs() ii) getc() and putc() **(6+4)**

UNIT – II

5. a. What is a stack? Explain the different operations performed on stack.

b. Write an algorithm for solving matching of nested parenthesis. **(6+4)**

6. a. Write an algorithm to delete an item from a circular linked list.

b. Write an algorithm to delete an element from the queue. **(5+5)**

7. a. Write an algorithm to convert a infix expression into postfix expression.
b. Explain the different categories of data structure. **(6+4)**

UNIT – III

8. a. Define the following tree terminology.
i) siblings ii) path iii) leaf node iv) level
b. Write an algorithm to search an element in a sorted list using binary search method. **(4+6)**

9. a. Explain the linked representation of a binary tree. Give an example.
b. Write the algorithms for three methods of binary tree traversal. **(4+6)**

10. a. Draw the binary tree for the expression $[x/(y * z) + A]/[(P/Q * S) + C]$.
Traverse it in preorder, post order and in order methods.
b. Explain quick sort with the help of an example. **(6+4)**

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COA 202. 2 Reg.No. .....

CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2016

B.C.A

Advanced Programming in C and Data Structures

Time: 3 Hrs Max. Marks: 80

PART – A

1. **Answer any 10 questions from the following:** 10x2=20
   a. What is a pointer? Write any one advantage of using pointer.
   b. What is a sparse matrix? Give an example.
   c. What do you mean by Data structure? What are its different types?
   d. Write the formula to access an element in a one dimensional array.
   e. What is a File? Write the importance of using the file.
   f. Give the 'C' structure definition to implement linked list.
   g. Define root and child node w.r.t trees.
   h. Give the memory representation of stack.
   i. What is a Queue? Write the drawbacks of representing queue using linear representation.
   j. What do you mean by underflow in stack?
   k. Write any two differences between array and linked list.
   l. Write any two applications of binary tree.

PART – B

Answer any TWO questions from each unit:

UNIT – I

2. a. What is dynamic memory allocation? Explain the commands used for the allocation with examples.
   b. What do you mean by Command line arguments? Explain with an example. **(5+5)**

3. a. Write a note on pointer expression.
   b. Write a program to read 'N' numbers from the keyboard, store all even numbers into a file EVEN. Dat and all odd numbers into ODD.Dat. **(5+5)**

4. a. Explain any five file handling functions with syntax and examples.
   b. Explain with an example pointer to structure. **(5+5)**

UNIT – II

5. a. Explain the methods used to represent two- dimensional arrays in Memory.
   b. Write an algorithm to convert an infix expression into postfix expression. **(4+6)**

6. a. Write an algorithm to implement stack using an array.
   b. What is a linked list? Write an algorithm to insert a node into a sorted linked list. **(5+5)**

7. a. Write 'C' functions to accomplish the following queue operations.
   i) Insert (x) ii) Queue –overflow ( )
   b. Convert the infix expression to postfix
   i) a*b/c+d ^e/g
   c. Explain the different types of linked list with diagram. (4+2+4)

UNIT – III

8. a. Write the algorithms for the three methods of binary tree traversal.
   b. Explain merge sort with the help of an example. (6+4)

9. a. Draw a binary search tree for the following list of numbers and traverse it inorder, postorder and preorder.
   50, 80, 40, 20, 60, 15, 30, 45
   b. Write an algorithm to search an element using Binary search method. (6+4)

10. a. Explain the linked representation of a binary tree with an example.
   b. Define the following tree terminology:
   i) Leaf node ii) path iii) degree of a tree iv) level v) branch
   (5+5)

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