

**2018****BCA****[HONOURS]****(Programming in C and Data Structures)****Paper : BCA-105**

Full Marks : 80

Time : 4 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*Answer **Question no.1** and any **four** from the rest.1. Answer any **eight** questions:  $2 \times 8 = 16$ 

- What is the difference between 'gete' and getche'?
- Distinguish between Constant and Variable.
- What is type casting?
- What is an array? How array can be declared?
- What is the difference between malloc ( ) and calloc ( )?
- What is the need of return ( ) statement?
- What is binary tree? Give example.
- In what general category do the # define and # include statement fall?

- Is '\*' a unary or a binary operator or both? Justify your answer with example.
- Define an algorithm.
- What is dequeue?
- What is recursion?

2. a) Convert the following to prefix expression:

$$(A * B + (C/D)) - E$$

- Write a C program to implement selection sort.
- Given the preorder and inorder sequence as follows:

<b>Preorder:</b>	A	B	D	G	H	E	I	C	F	J	K
<b>Inorder:</b>	G	D	H	B	E	T	A	C	J	F	K

Draw binary tree.

- What is polish notation?  $2+8+4+2=16$
- Explain while statement with example.
- Write a program in C to display triangle of numbers of the form

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                1
            2   2
        3   3   3
    4   4   4   4

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c) What is Conditional Operator? What is Comma Operator?

d) What is Structure? What is the difference between Structure and Union?

4+4+4+4=16

4. a) Differentiate between a stack and a queue.

b) What is the difference between BFS and DFS?

c) What is the advantage of doubly linked list over singly linked list?

d) Write an algorithm to delete a node from a singly linked list.

2+4+4+6=16

5. a) Write down the algorithm of Bubble Sort Implementation of the above algorithm.

b) What is indegree and outdegree of a graph?

c) Define graph with adjacency matrix.

8+4+4=16

6. a) Write a program to find a given three digit number is armstrong or not.

b) Write a program to convert all lower case letter to upper case in a given string.

c) Differentiate between call by value and call by reference.

6+6+4=16

7. Write short notes of the following (any four):

4×4=16

a) Storage class

b) Insertion sort

c) Different modes of file opening

d) Binary search

e) Circular linked list

f) Tree traversal algorithm