

INDIAN STATISTICAL INSTITUTE  
BANGALORE CENTRE  
Documentation Research and Training Centre

M. S. (Library and Information Science) 2016-18  
Second Year, Semester II (Final)

Paper 10: Data Structures and Computer Programming  
Date: 11<sup>th</sup> May 2017

Duration: 3 hours

Full marks: 60

Answer any 5 Questions

1) a) What is the output of the following program? [3 marks]

b) Make the appropriate changes to print the message exactly 10 times. ~~[3 marks]~~ 4

```
main()
```

```
    int i =1;
```

```
    while(i<=10)
```

```
    {
```

```
        printf("\n Make the computer literate \ n ");
```

```
        i = i+1
```

```
    }
```

```
}
```

c) Write a note on asymptotic notations with examples ~~[4 marks]~~ 5

2) a) Write an algorithm for Bubble sort. ~~[5 marks]~~ 6

b) Trace the algorithm for unsorted array : ~~[5 marks]~~ 6

14, 33, 27, 35, 10

3) a) What is merge sort? Write the algorithm

3+3  
~~[2+3 marks]~~

b) Explain the algorithm using the following unsorted array as input ~~[5 marks]~~

6

14, 33, 27, 10, 35, 19, 42, 44

4) a) What is stack data structure? Explain its basic operations (Push, pop, is empty, isfull) with an example

~~[2+1+1+1+1 marks]~~

3+1+1+1+1

b) Explain how a recursive program internally uses stack with an example

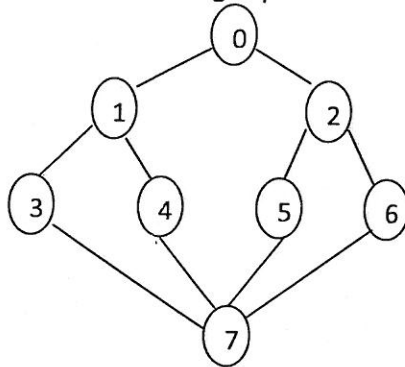
~~[4 marks]~~ 5

5) a) Write algorithm for Breadth First Search (BFS).

~~[5 marks]~~ 6

b) Trace the algorithm for following input tree.

~~[5 marks]~~ 6



6) a) What is a Binary tree? Write functions for inorder, pre order and post order traversals

[5 marks]

b) What is the max and minimum number of nodes of a binary tree which has depth = 9.

[2 marks]

c) Write inorder, pre order, and postorder traversal for the following tree.

~~[3 marks]~~ 5

