

MASTER'S IN MATHEMATICS WITH  
APPLICATIONS IN COMPUTER SCIENCE  
M.Sc. (MACS)

Term-End Examination

June, 2010

00596

MMT-001 : PROGRAMMING AND DATA  
STRUCTURES

Time : 1½ hours

Maximum Marks : 25

*Note : Question No. 1 is compulsory. Answer any three questions from questions no. 2 to 5. Use of calculator is not allowed. All programs should be written in 'C' language.*

1. Which of the following statements are *true* and which are *false* ? Give reasons for your answer :

5x2=10

- (a) A queue is a LIFO structure.
- (b) The storage occupied by a Doubly Linked List is more than a Singly Linked List.
- (c) Priority queues are used for multi user systems.
- (d) The number of different trees with 3 nodes is 6.

- (e) The memory allocated for the following variables will be the same.

struct one

int x ;

int y ; } ;

Union two {

int x ;

int y ; } ;

2. (a) Evaluate the following expression by using the stack : 5, 15, 5, -, 2, 3, +, /, +. Terms in the expression are separated by commas. 2
- (b) Write a program in 'C' language that accepts a string as input and checks whether it is a Palindrome or not. 3
3. (a) State any two advantages/disadvantages of a circular queue over the linear queue. 2
- (b) Write a program in 'C' language for the creation of a Binary Tree. 3
4. Write a program to illustrate technique of recursion for evaluating the Fibonacci series given by 5
- by
- $$f(0)=1;$$
- $$f(1)=1;$$
- $$f(n)=f(n-1)+f(n-2);$$

5. (a) What is an indexed sequential organisation of a file ? Indicate any one of its applications. 3
- (b) Write a program to print the following output. For example, if  $n=3$  the output is as follows : 2

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      1
     1  2  1
    1  2  2  1
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