CBCS Scheme

USN | | | | | | | | | | |

16MCA11

First Semester MCA Degree Examination, June/July 2017
Data Structure Using C

Time: 3 hrs. Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1 a. Explain the switch statement with example. **(04 Marks)**

b. Explain with example scanf( ) and printf( ) function in 'C'. **(06 Marks)**

c. Explain the following control structure with example: i) while ii) for. **(06 Marks)**

OR

2 a. What are user defined functions? Explain the different categories of the function with example. **(12 Marks)**

b. What are arrays? Explain array declaration and initialization with example. **(04 Marks)**

Module-2

3 a. Define data structures. And explain the classification of data structures and its operations. **(10 Marks)**

b. What is an abstract data type? Write the ADT for an array. **(06 Marks)**

OR

4 a. What is pointer? How do you declare pointer variable? Write a program to show call-by-reference function. **(08 Marks)**

b. What is a structure? Give the syntax for defining a 'C' structure? Also explain how the individual members of the structure are accessed with example. **(08 Marks)**

Module-3

5 a. Define stack. List the primitive operations that are performed on a stack. Also write C implementation for these operations. **(10 Marks)**

b. Evaluate the postfix expression using stack
623 + –382/ + *2$3 + **(06 Marks)**

OR

6 a. Define recursion. Write its properties. Write the recursive function in 'C' to find the factorial of a number. **(05 Marks)**

b. Convert the following infix expression to postfix expression, showing the contents of stack at each step
((A – (B + C)) * D) $ (E + F) **(05 Marks)**

c. What is queue? Explain the variants of queue. **(06 Marks)**

Module-4

7 a. What is a linked list? Write the 'C' functions for
i) Inserting a node at beginning
ii) Delete the last node from the list **(10 Marks)**

b. Write short note on getnode( ) and freenode( ) operations. **(06 Marks)**

OR

8 a. What is doubly linked list? Write a 'C' module to delete a node at any position, beginning and from end of the list. **(10 Marks)**

b. Write short note on dynamic memory allocation. **(06 Marks)**

Module-5

9 a. Define : Binary tree, strictly binary tree, complete binary tree, depth of a tree, level of a node. **(05 Marks)**

b. Write the 'C' modules for three types of tree traversal. Also write all the three types of tree traversal for the given binary tree. **(11 Marks)**

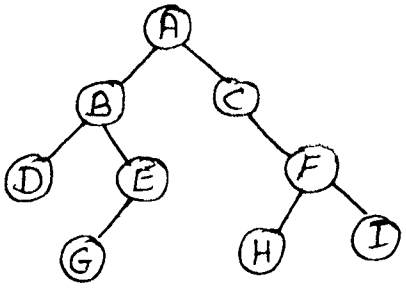

Fig Q9(b)

OR

10 a. Explain Hashing with an example. How do you resolve hash clashes? **(08 Marks)**

b. Explain with example Buble sort and Binary search. **(08 Marks)**

* * * * *