Reg. No. ☐☐☐☐☐☐☐☐

II Semester B.C.A.3 Degree Examination, May/June 2017
DATA STRUCTURES USING 'C'
(2014-2015 Onwards)
(Regular and Repeater)

Time : 3 Hours   Max. Marks : 80

Instructions : 1) Answer **all** Sections.
              2) Draw **neat** diagram **wherever** necessary.
              3) Write question **numbers correctly**.

SECTION – A

1. Answer **any ten** questions :   (10×2=20)

   a) What is data structure ? Mention its applications.

   b) Define structure and union.

   c) What is the purpose of getw( ) and putw( ) functions ?

   d) What is LIFO data structure ? How do you declare it using structure ?

   e) What is the purpose of fwrite( ) statement ?

   f) What is the use of sizeof( ) and free( ) functions ?

   g) State advantages of circular queue.

   h) What is double ended queue ? Mention its types.

   i) What is self referential structure ?

   j) What is empty list ?

   k) Define strictly binary tree.

   l) Define level of a tree.

SECTION – B

Answer **any four** questions :   (4×5=20)

2. Explain file error handling functions.

3. Compare malloc( ) and calloc( ) functions.

P.T.O.

4. Write a C program to print nth Fibonacci number using recursion.

5. Write following functions to demonstrate stack operations :

   1) push( )

   2) pop( ).

6. Differentiate between singly linked list and doubly linked list.

7. Explain complete binary tree and binary search tree.

SECTION – C

Answer **any four** questions : **(4×10=40)**

8. Write a program in C to create a file and display its contents in proper format using following fields – Book_id, Book_name, Author and Price_of_book. **10**

9. Convert the following infix expressions to postfix and prefix expressions.

   1) $x * y - z \wedge M + N - P/Q$. **4**

   2) $A * B - C + D/(E + F)$. **4**

   3) $(A + B) * (D - C)$. **2**

10. a) Differentiate between ordinary queue and circular queue.

    b) Write a note on priority queue. **(5+5)**

11. Explain the following terms :

    1) Ancestors

    2) Forest

    3) Path

    4) Non-terminal node

    5) Degree of a tree. **(2+2+2+2+2)**

12. Write short notes on **any two** :

    1) Pointers

    2) File I/O functions

    3) Circular linked list. **(5+5)**

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