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B.Sc. IV Semester Degree Examination, May/June 2017
COMPUTER SCIENCE
Data Structures Using C (New)

Time : 3 Hours

Max. Marks : 80

SECTION – A

I. Answer any ten :

(10×2=20)

- 1) Define data structure.
- 2) State the difference between stack and queue.
- 3) Define pointer. State the disadvantages of using pointers.
- 4) Mention the types of data structures.
- 5) Represent a node of a double linked list diagrammatically.
- 6) Mention the difference between malloc () and calloc ().
- 7) What do you mean by pointer arithmetic ?
- 8) What are the operations that can be performed on arrays ?
- 9) Give the condition for STACK_FULL, STACK_EMPTY.
- 10) What do you mean by recursive function ? How is it invoked ?
- 11) Represent an expression in infix, prefix and postfix format.
- 12) State any two applications of stack.

SECTION – B

II. Answer any six :

(6×5=30)

- 1) Obtain the prefix expression for $X^Y Z - M + N + P / Q$.
- 2) State the procedures for evaluation of postfix expression.
- 3) Write the 'C' function for push () w.r.t. stack.
- 4) Write a 'C' program to calculate factorial of a given number using recursion.
- 5) Write a 'C' function to insert an integer at the rear of a simple queue.

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- 6) Explain the concept of a single linked list.
- 7) Define : root node, siblings, left subtree, leaf node, height of a tree.
- 8) Explain the concept of binary search.

SECTION – C

III. Answer **any three** :

(3×10=30)

- 1) Explain different types of queues.
- 2) Write a C program to demonstrate linear search method.
- 3) Write a C program for bubble sort with diagram.
- 4) Explain the various operations that can be performed on a double linked list with diagram.
- 5) Write a C program to implement a queue using single linked list.