SH-III/Computer Sc./301C-5(T)/19

B.Sc. Semester III (Honours) Examination, 2018-19

COMPUTER SCIENCE

Course ID : 31511 **Course Code : SHCSC-301C-5(T)**

Course Title : Data Structure

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions: 1×5=5

(a) What is stack?

(b) What is tree?

(c) Define Linked-list.

(d) What is hashing?

(e) What is array?

(f) What is AVL tree?

(g) What is the best case time complexity of Bubble sort algorithm?

(h) What is the number of nodes in a complete binary tree of depth k?

2. Answer *any two* questions: 5×2=10

(a) Write the PUSH() and POP() operation of a stack.

(b) Suppose an array A contains 6 elements as follows: 77, 33, 44, 11, 88, 22.

Apply selection sort algorithm to sort (ascending order)

(c) Write down the binary search algorithm.

(d) What are the advantages and disadvantages of linked-list over an array? Explain.

3. Answer *any one* question: 10×1=10

(a) Write the algorithm to evaluate a post fin expression and using the algorithm evaluate the following expression:

P : 5, 6, 2, +, *, 12, 4, 1, – 6+4=10

(b) Given the pre-order and in-order sequence, draw the resultant binary tree and write its post-order traversal:

Pre-order : A B D G H E I C F J K

In-order : G D H B E I A C J F K

SH-III/Computer Sc.-301C-5(P)/19

B.Sc. Semester III (Honours) Practical Examination, 2018-19

COMPUTER SCIENCE

Course ID : 31521 **Course Code : SHCSC-301C-5(P)**

Course Title : Data Structures Lab

Time: 2 Hours **Full Marks: 15**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

(LNB + VIVA = 05, Experiment = 10)

Attempt *any one*.

1. Perform stack operation using Linked-list implementation.

2. Write a program to calculate GCD of 2 numbers.

3. Write a program to display Fibonacci series.

4. Write a program to add two polynomials using linked-lists.

5. Write a program to implement lower triangular matrix using one-dimensional array.

6. Write a program to display its preorder, postorder and inorder traversals of a BST.

7. Write a program to calculate factorial of a number.

8. Implement doubly linked-list using template.

9. Write a program to reverse the order of the elements in the stack using additional stack.

10. Write a program to create a BST and then search an element in the BST.

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