Code : 303403

BCA 4th Semester Exam., 2018

FILE AND DATA STRUCTURE

Time : 3 hours *Full Marks* : 60

Instructions :

(i) All questions carry equal marks.

(ii) There are ***SEVEN*** *questions in this paper.*

(iii) Attempt ***FIVE*** *questions in all.*

(iv) Question Nos. ***1*** *and* ***2*** *are compulsory.*

1. Answer the following questions (any *six*) :

(a) What is Big O notation? Explain.

(b) What is dynamic memory allocation? How is it different from static memory allocation?

(c) Construct a binary tree for the expression, exp = (a – b) + (c * d).

(d) What do you understand by stack overflow and stack underflow?

(e) Differentiate between push() and pop() functions.

(Turn Over)

(f) What is queue? Write an algorithm t insertion a new element in queue.

(g) What is degree of a node in a graph? Expla with an example.

(h) Define sorting. What is the importance sorting?

(i) Create a binary search tree using th following data elements :

45, 39, 56, 12, 34, 78, 32, 10, 89, 54, 67, 8

(j) What is threaded binary tree?

2. Answer any *three* of the following :

(a) Discuss the best case, worst case an average case complexity of an algorithm.

(b) Write an algorithm to print the number nodes in a linked list.

(c) Explain the difference between linear an binary search.

(d) Write an algorithm for PUSH() and POP operations.

(Continued

(e) Suppose a 10-element array A contain the values a_1, a_2, ..., a_{10}. Find the value of A after loop :

(i) Repeat for K=1 to 9
Set A[K+1]=A[K]
[End of loop]

(ii) Repeat for K=1 to 9
Set A[K+1]=A[9]
[End of loop]

3. What is data structure? What are the different operations that can be performed on data structure?

4. Write an algorithm for inserting a new node at beginning and end of a single linked list.

5. What is stack? What are the different possible operations can be possible in stack? Explain.

6. What is graph? Explain the different traversal algorithms are used in graph.

7. What is tree? Explain the different algorithms are used for the traversal of binary tree.

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