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Roll No ....

CS-113/IT-111

B.E. I & II Semester

Examination, June 2017

Choice Based Credit System (CBCS)

Data Structure - I

Time : Three Hours

Maximum Marks: 60

Note: i)   Attempt any five questions

    ii)   All questions carry equal marks.

1. a)   What is an algorithm? What are its various characteristics?

   b)   Write a C/C++ program to read the marks obtained by a student in three different subjects and then compute and display their average.

2. a)   Write a C/C++ program to perform linear search on an array.

   b)   What are the typical operations associated with arrays? Explain.

3. a)   A 10×12 matrix is implemented using array A[10] [12] if the base address of the array is 200 and the word size is 2 then compute the address of the element A[4,7] in

    i)   Row major order

    ii)   Column major order.

   b)   List the characteristic of string.

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4. a)   Write an algorithm for PUSH and POP of stack?

   b)   What is objective of implementing a queue in circular fashion?

5. a)   Convert the following infix notation into postfix notation using stack

$$A - B - (C * D - F/G) * E$$

   b)   How is recursion different from iteration.

6. a)   Explain in detail about the graph traversal technique with suitable example.

   b)   Write an algorithm to search particular data in a singly linked list.

7. a)   List some of the application of graph.

   b)   Write a C/C++ program to sort the data using bubble sorting.

8. Give an algorithm for quick sort and explain its time complexity. Trace the algorithm for the following data

65 70 75 80 85 60 55 50 45

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6. a) Discuss super conductivity.

   b) Explain Hall effect in semiconductors.

7. a) Explain Junction Transistor.

   b) Discuss optical properties of materials.

8. Write short notes on any two:

   a) Fibre materials

   b) Magnetostriction

   c) Ruby laser

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