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(May)

COMPUTER SCIENCE

(General)

Course : 401

(Data Structure with C++)

Full Marks : 48

Pass Marks : 19

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following as directed : $1 \times 6 = 6$

(a) Define object.

(b) What is abstract data type?

(c) The — operation is used to insert an element into a stack.

(Fill in the blank)

(d) Elements can be added at both end of a circular queue.

(State True or False)

(e) Define height of a tree.

(f) Name any two string operations in C++.

2. Answer the following :

2×6=12

(a) Write two major differences between C and C++ programming.

(b) Explain how general data types differ from abstract data type.

(c) Write an algorithm to push an element at the top of a stack.

(d) What are different possible ways to implement double-ended queue?

(e) What is the difference between full binary tree and complete binary tree?

(f) Write a C++ program to concatenate two strings.

3. Answer the following (any six) :

5×6=30

(a) With the help of example, differentiate between branching and looping.

(b) Why do we need to structure the data? Explain how abstract data types contribute towards structuring of data elements.

(c) What is priority queue? Write the algorithm to insert and delete an element from a queue.

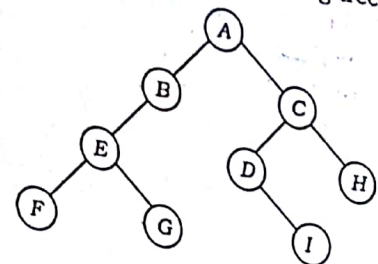
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(3)

(d) Write an algorithm to insert an element at the beginning of a linked list.

(e) Write the in-order, post-order and pre-order traversals of the following tree :



(f) Write a C++ program to perform binary search from a list of n numbers.

(g) Insert the following elements into a binary search tree :

8, 16, 4, 3, 2, 18, 17

From the tree obtained, delete the following :

17, 16

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