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Question Paper Code : 27158

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Third Semester

Computer Science and Engineering

CS 6301 — PROGRAMMING AND DATA STRUCTURES — II

(Common to Information Technology)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the significance of declaring a member of a class static.
2. What is the use of "this" pointer?
3. How the C string differs from a C++ type string?
4. What is dynamic initialization of objects?
5. Compare overloaded functions versus function templates.
6. When do we use multiple catch handlers?
7. What are the various operations that can be performed on B-trees?
8. What are Splay trees?
9. What is the minimum number of spanning trees possible for a complete graph with n vertices?
10. What is topological sorting?

PART B — (5 × 16 = 80 marks)

11. (a) (i) How can you specify a class? (6)
(ii) Describe the different mechanisms of accessing data members and member functions in a class with a suitable example. (10)

Or

- (b) (i) Explain the different types of constructors with suitable examples. (10)
(ii) Describe the types of storage classes. (6)

12. (a) (i) Write a C++ program to overload the increment operator with prefix and postfix forms. (12)
(ii) Distinguish the term overloading and overriding. (4)

Or

- (b) (i) Write a C++ program to explain how the run time polymorphism is achieved. (8)
(ii) Illustrate any four types of inheritance supported in C++ with suitable examples. (8)
13. (a) (i) Write a function template for finding the maximum value in an array. (8)
(ii) Write a C++ program to handle a divide by zero exception. (8)

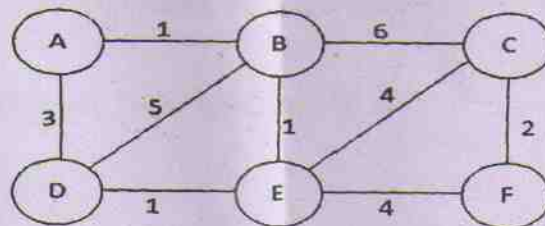
Or

- (b) (i) Describe the components of STL. (8)
(ii) Write a class template to represent a stack of any possible data type. (8)
14. (a) (i) Define AVL tree and starting with an empty AVL search tree, insert the following elements in the given order: 35, 45, 65, 55, 75, 15, 25 (8)
(ii) Explain the AVL rotations with a suitable example. (8)

Or

- (b) Illustrate the construction of Binomial Heaps and its operations with a suitable example. (16)

15. (a) (i) Compute the minimum spanning tree for the following graph. (8)



- (ii) Discuss any two applications of depth-first search. (8)

Or

- (b) Explain the Dijkstra's algorithm for finding the shortest path with a sample graph.