Reg. No. | | | | | | | | | | | | |

Question Paper Code : 57236

B.E./B. Tech. DEGREE EXAMINATION, MAY/JUNE 2016

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. When do you declare a member of a class static ?
2. List out the advantages of using storage classes.
3. How does a C string differs from a C++ type string ?
4. Distinguish the term overloading and overriding.
5. Distinguish the term template class and class template.
6. List out the types of containers.
7. List out the various operations that can be performed on B-trees.
8. What is amortized analysis ?
9. What are the different ways to represent the graph ?
10. List out the applications of depth-first search.

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Describe the different mechanisms for accessing data members and member functions in a class with a suitable example. **(10)**

(ii) Explain the role of this pointer. **(6)**

OR

(b) What is a constructor ? Explain the different types of constructors with suitable examples. **(16)**

12. (a) (i) Write a C++ program to overload the decrement operator with prefix and postfix forms. **(8)**

(ii) Explain any two types of inheritance supported in C++ with suitable examples. **(8)**

OR

(b) With suitable C++ program explain how the polymorphism is achieved at compile time and run time. **(16)**

13. (a) (i) Write a class template to represent a queue of any possible data type. **(8)**

(ii) Illustrate about how exceptions are handled using multiple catch handlers. **(8)**

OR

(b) (i) Explain the components of STL. **(8)**

(ii) Write a C++ program that reads a text file and creates another file that is identical except that every sequence of consecutive blank spaces is replaced by a single space. **(8)**

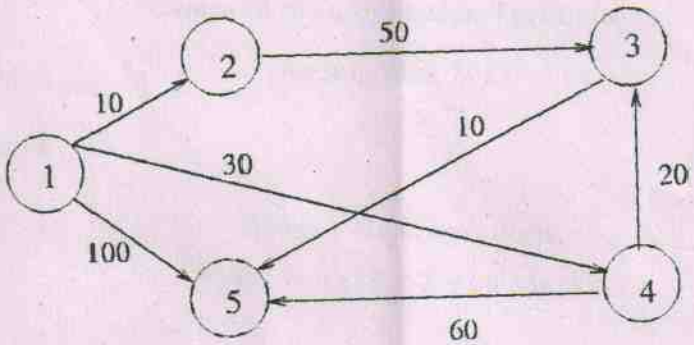
14. (a) (i) Define AVL tree and starting with an empty AVL search tree, insert the following elements in the given order : 2, 1, 4, 5, 9, 3, 6, 7 **(8)**

(ii) Explain the AVL rotations with a suitable example. **(8)**

OR

(b) Implement the Fibonacci heaps and compare their performance with binary heaps when used in Dijkstra's algorithm. **(16)**

15. (a) (i) Illustrate the Dijkstra's algorithm for finding the shortest path with the following graph. **(12)**



(ii) Illustrate the comparison of Floyd's algorithm with Dijkstra's algorithm. **(4)**

OR

(b) Find the minimum spanning tree for the given graph using both Prim's and Kruskal's algorithm and write the algorithms. **(8 + 8)**