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Question Paper Code : 91392

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Third Semester

Computer Science and Engineering

CS 6301 – PROGRAMMING AND DATA STRUCTURES – II

(Common to Information Technology)

(Regulations 2013)

(Also common to PTCS 6301 – Programming and Data Structures – II for B.E.

(Part-Time) – Second Semester – Computer Science and Engineering

– Regulations – 2014)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Write the differences between C and C++ programming language.
2. Compare C++ reference variables with C++ pointers.
3. Outline the role of copy constructors in C++.
4. Explain the dynamic memory allocation operators of C++.
5. Identify the standard header files used for I/O operations in C++.
6. Write in brief about the keywords used in C++ exception handling.
7. Illustrate the purpose of amortized analysis.
8. Define Disjoint-set data structure.
9. Define indegree and outdegree of a directed graph.
10. Write short notes on Kruskal's Algorithm.

PART – B

(5×13 = 65 Marks)

11. a) i) Explain the different types of storage classes of C++ using a simple program. (4+4)
- ii) State the use of 'this' pointer and demonstrate it using a simple C++ program. (2+3)

(OR)



- b) i) Define Constructor in C++ class. Explain how it differs from normal member functions. Differentiate default and parameterized constructors using a simple C++ program. (2+2+3+3)
- ii) Define Destructor of C++ class. List the various cases, when does destructor being called in a C++ program (3)
- 12. a) i) Describe function overloading and demonstrate it using a suitable C++ program (4+6)
- ii) Differentiate compile and runtime polymorphism. (3)

(OR)

- b) i) Explain operator overloading and demonstrate it using a suitable C++ program. (4+6)
- ii) Discuss the use of "nested classes" using C++ program. (3)
- 13. a) i) Define templates used in C++ language. Explain the syntax and the role of function and class templates using a C++ program. (2+4+4)
- ii) Discuss the use of "abstract class" using C++ program. (3)

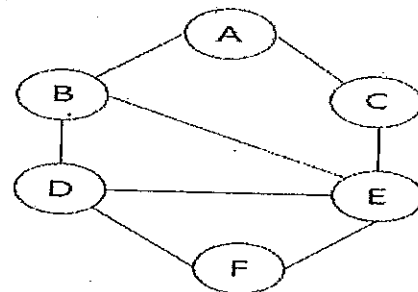
(OR)

- b) i) Demonstrate exception handling with multiple catch blocks using C++ program. (6)
- ii) Write file handling routines to copy one file content into another file. (7)
- 14. a) i) Insert the following keys 10, 20, 15, 45, 60 and 5 into an empty AVL tree one by one. (7)
- ii) Insert the keys 1, 10, 2, 9 and 3 into empty Splay tree. (6)

(OR)

- b) i) Write the properties of B-tree. (3)
- ii) Insert the keys 1 - 10 into B-tree of order 3. Delete the key 10. (10)

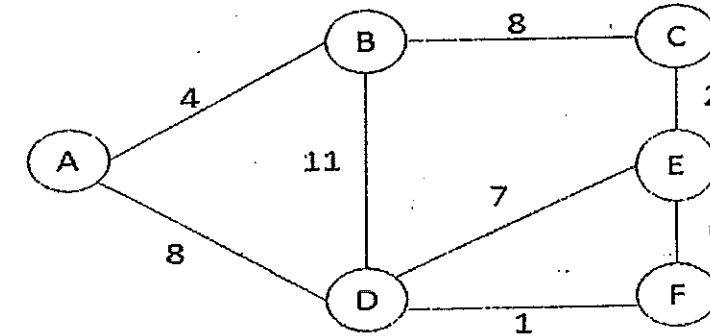
- 15. a) Perform depth first search and breadth first search for the given graph. Write procedures. Illustrate each traversal using stack or queue. (5+5+3)



(OR)



- b) Apply Prim's Algorithm to find the minimum spanning tree. Write procedure. (10+3)



PART - C

(1×15 = 15 Marks)

- 16. a) Write a C++ program to implement the following. Let Employee be a parent class and Manager and Clerk derived from this class. Use virtual function calculatePay() appropriately such that the C++ program calculates payment for manager and clerk separately. Make necessary assumptions for calculation of salary/pay. (15)

(OR)

- b) Apply Dijkstra's shortest path algorithm for the given graph from the vertex 0. Write procedure. (10+5)

