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Question Paper Code: 52857

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Computer Science and Engineering

CS 6301 - PROGRAMMING AND DATA STRUCTURES - II

(Common to: Information and Technology)

(Regulation 2013)

(Also common to PTCS 6301 – Programming and Data Structures II for B.E. Part-time - Second Semester – Computer science and Engineering –Regulation 2014)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A — $(10 \times 2 = 20 \text{ marks})$

- 1. Define an object. Give an example.
- 2. What is 'this' pointer in C++?
- 3. State the use of operators 'new' and 'delete' in C++.
- 4. Define inheritance. Give its types.
- 5. What is an abstract class? Give an example.
- 6. What is an exception Handling. Give an example.
- 7. What is a nonlinear data structure? Give an example.
- 8. What are disjoint sets? Give an example.
- 9. Define Euler path and Euler circuit of a graph.
- 10. What is a minimal spanning tree? Give an example.

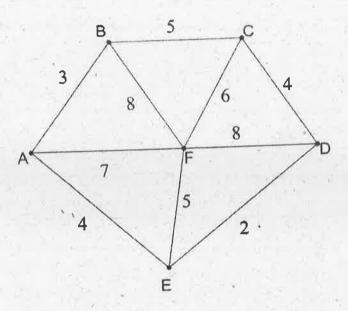
PART B — $(5 \times 13 = 65 \text{ marks})$

| 11. | (a) | (i) | Outline abstraction and encapsulation with an example. | | | | |
|-----|-----|------|---|---------------|--|--|--|
| | | (ii) | Explain the storage classes in C++. | (7) | | | |
| | | | Or | | | | |
| | (b) | (i) | Write a C++ program to print the first 'n' prime numbers. | (6) | | | |
| | | (ii) | Write a C++ program to accept a square matrix, find the transpand print the result. Use classes and member functions. | pose (7) | | | |
| 12. | (a) | Writ | te a C++ program to sort an array of 'N' names in alphabetic order | r. (13) | | | |
| | | | Or | | | | |
| | (b) | (i) | Explain dynamic memory allocation in C++ with code snippets. | (7) | | | |
| | | (ii) | What is polymorphism? Outline compile time polymorphism runtime polymorphism with an example. | and (6) | | | |
| 13. | (a) | Exp | lain exception handling in C++ with an example. | (13) | | | |
| | | | Or | | | | |
| | (b) | | at is a template? Explain class template and function template code. | with (13) | | | |
| 14. | (a) | | at is an AVL tree? Illustrate the steps in the algorithm for insert e into an AVL tree with an example. | ing a (13) | | | |
| | | | Or | | | | |
| | (b) | | at is a splay tree? Illustrate the steps in the algorithm for deleting the form a splay tree with an example. | ing a (13) | | | |
| 15. | (a) | | plain the algorithm for breadth-first search traversal of a graph example. | with (13) | | | |
| | | | Or | | | | |
| | (b) | | cline the steps in the Dijkstra's single-source shortest path algor h an example. | rithm (13) | | | |
| | | | | | | | |

16. (a) Construct a B - tree of order 5 for the following key values: 1, 12, 8, 2, 25, 6, 14, 28, 17, 7, 52, 16, 48, 68, 3, 26, 29, 53, 55 arid 45. Illustrate the tree construction process step by step. (15)

Or

(b) Apply the Kruskal's algorithm to find the minimal spanning tree for the following graph: (15)



Adapt of Fig. X or St. 1997.

(4)