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

Question Paper Code : 52437

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Third Semester

Electronics and Communication Engineering

EC 2202 – DATA STRUCTURES AND OBJECT ORIENTED PROGRAMMING IN C++

(Regulations 2008)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. What is the operator used in C++ to calculate the size of datatypes ?
2. Does C++ compiler create default constructor when we write our own constructor ?
3. Which header files needs to be included to perform file processing in C++ source file ?
4. State whether the friend functions in inherited classes are possible to inherite further.
5. What is Priority Queue in STL ?
6. List two applications where binary heaps are used.
7. Define NP completeness.
8. What is Topological Sort ?
9. What are the types of sorting ? List them with examples.
10. Compare Greedy and Dynamic Programming techniques.

PART – B **(5×16=80 Marks)**

11. a) i) What are the concepts in C++ that makes it Object Oriented ? Give details.

    ii) Create an account class that a bank might use to represent customers, bank accounts. **(6+10)**

(OR)

b) i) Write minimum of 20 overload operators and all the operators that cannot be overloaded in C++ and

    ii) Write code to overload post and pre increment operators. **(6+10)**

12. a) i) Write short notes on Runtime Polymorphism.

ii) Write in detail about Virtual Functions and the inheritance of virtual functions with C++ code with example. **(6+10)**

(OR)

b) What are Generic Programs ? Explain with a sample C++ code. **(16)**

13. a) Write C++ program that demonstrates operations in hash tables. **(16)**

(OR)

b) Write C++ program that implements stack. **(16)**

14. a) Write Kruskal's and Prim's (starts at F) Minimum Spanning Tree Algorithm and apply both techniques on the graph given below in fig. 1 whenever Prim's and Kruskal's algorithm yield different minimum spanning trees. Explain why or why not ? **(16)**

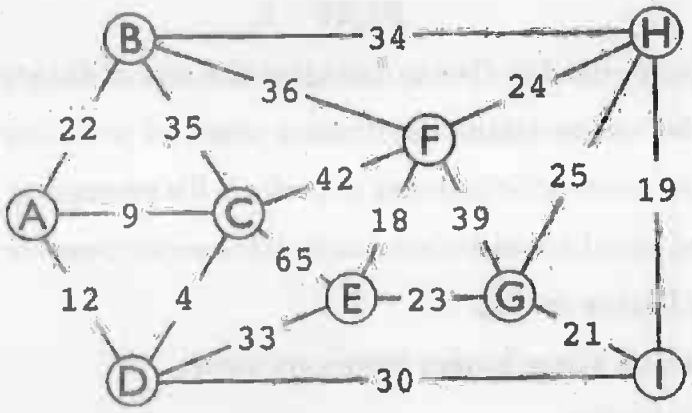

Fig. 1

(OR)

b) Write code in C++ to implement AVL Tree Insertion. Show the result of inserting 2, 1, 4, 5, 9, 3, 6, 7 into an initially empty AVL tree. **(10+6)**

15. a) i) Write code for heapify Up and Down. **(8+8)**

ii) How many number is exchanged during the maximum number element delete from the binary heap which contains the keys 1 to 15 ?

(OR)

b) Write C++ code to implement merge sort and apply to the following data 14, 6, 3, 9, 7, 16, 2, 15, 5, 10, 8, 11, 1, 13, 12, 4. **(10+6)**

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