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Question Paper Code : 40951

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
Third/Fourth Semester
Electronics and Communication Engineering
EC 6301 – OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES
(Common to : Biomedical Engineering/Medical Electronics/Robotics and
Automation Engineering)
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. List the access specifiers in C++.
2. Outline the role of the unary operators new and delete in C++.
3. Define an abstract class and a concrete class.
4. Present the syntax for class declaration in C++.
5. Define an abstract data type.
6. What is a nonlinear data structure ? Give examples.
7. Define a binary tree. Give example.
8. Outline an undirected graph with an example.
9. State the difference between merge sort and quick sort.
10. How linear search algorithm works ?

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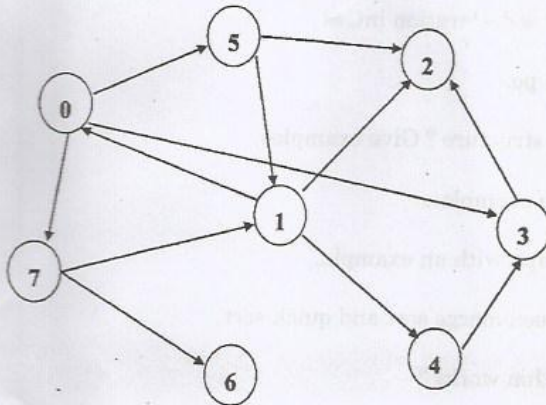
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PART - B

(5×13=65 Marks)

11. a) What is a constructor ? Outline with an example default constructor, parameterized constructor and copy constructor. (13)
(OR)
b) i) Write a C++ program to print the prime numbers from 2 to n. (6)
ii) What is a friend function ? Explain with an example. (7)
12. a) Define inheritance. Outline with an example public inheritance, protected inheritance and private inheritance. (13)
(OR)
b) When should pure virtual functions be used in C++ ? Present an example of when pure virtual functions are necessary and map the example you have presented to a C++ program. (13)
13. a) Outline a queue data structure with a diagram and explain the algorithm for inserting data into a queue and deleting data from a queue. (13)
(OR)
b) Explain with an example the algorithm for evaluating a postfix expression using stack data structure. (13)
14. a) Explain with an algorithm and an example preorder, inorder and postorder traversal on a binary tree. (13)
(OR)
b) Outline the breadth first traversal algorithm for a graph and apply the breadth first traversal algorithm to the following directed graph :



Start with node 5 and illustrate the traversal process step by step. (13)



15. a) Explain the merge sort algorithm with an example. (13)
(OR)
b) Outline the steps to perform binary search on a sorted array of 'N' numbers with an example. (13)

PART - C

(1×15=15 Marks)

16. a) Write a C++ program to sort an array of 'n' numbers in ascending order. (15)
(OR)
b) Write a C++ program to multiply two matrices. Use classes and member functions. (15)
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