Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : X 20399

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Fourth Semester

Electrical and Electronics Engineering

CS 6456 – OBJECT ORIENTED PROGRAMMING

(Common to Electronics and Instrumentation Engineering, Instrumentation and Control Engineering)

(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   **(10×2=20 Marks)**

1. What is meant by Object Oriented Programming ?

2. Define abstraction.

3. When do you call an object destructor ?

4. What is a pure virtual function ?

5. What are templates ?

6. What are exceptions ?

7. What is Java virtual machine ?

8. List the logical operators in Java.

9. What is an interface ?

10. Write short notes on throw().

PART – B **(5×13=65 Marks)**

11. a) i) Explain the characteristics of OOP. **(6)**

    ii) Compare and contrast OOP and procedure oriented programming. **(7)**

    (OR)

    b) i) Explain the various operations available in C++. **(6)**

    ii) Explain about dynamic allocation in C++. **(7)**

12. a) Explain the various types of constructors that are available in C++ with suitable examples.

    (OR)

    b) What is meant by polymorphism ? Explain the various types of polymorphism in C++ with suitable examples.

13. a) i) Implement a dictionary named "Index" which consists of *Key Terms* and its *Descriptions* using MAP STL. Try to display all the terms and descriptions present in the dictionary and if a key term has been provided as an input, the corresponding description should get displayed as an output to the user by searching the entire dictionary. **(7)**

    ii) Implement a circular queue with proper insertion and deletion operations using Class Templates. **(6)**

    (OR)

    b) i) Write a C++ program to accept integer or string values from the user within a specified range. (Range has to be specified with minimum and maximum by the user). If the input violates the range, appropriate exception needs to be raised. **(5)**

    ii) Write a C++ program to sort a list of integers, floating point numbers and characters by quick sort mechanism using function templates. **(5)**

    iii) Write short notes on the storage structures available with standard template libraries. **(3)**

14. a) i) Highlight the features of Java.   **(4)**

        ii) Explain the different looping constructs of Java with examples.   **(9)**

                        (OR)

     b) Explain the types of inheritance in Java with examples.

15. a) i) Explain interfaces in Java with an example.   **(8)**

        ii) Write a Java program to accept a string, count the number of vowels in
             the string and print the result.   **(5)**

                        (OR)

     b) What is exception handling ? Discuss exception handling in Java with an
         example.   **(13)**

                        PART – C   **(1×15=15 Marks)**

16. a) Consider a book shop which sells both books and video-tapes. Create a class
         media that store the title and price of a publication. Create two derived classes,
         one for storing the number of pages in a book and another for storing the playing
         time of a tape. Write a function display ( ) is used in all the classes to display
         the class contents.

         Note : that the function display ( ) has been declared virtual in media, the
         base class. Write a C++ program for the above.   **(15)**

                        (OR)

     b) i) Write a java program to sort an array of 'N' numbers in ascending order.
             Use classes and methods.   **(8)**

        ii) Write a java program to accept a string, reverse the string, check whether
             the string is a palindrome and print the result. Use classes and methods.

             Note : An example for palindrome : consider the string 'MALAYALAM' when
             you reverse the string you get back the original string 'MALAYALAM'
             and hence the string "MALAYALAM" is a palindrome.   **(7)**

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