

Code: 19IT3302

II B.Tech - I Semester – Regular Examinations – MARCH 2021

**OBJECT ORIENTED PROGRAMMING USING C++
(INFORMATION TECHNOLOGY)**

Duration: 3 hours

Max. Marks: 70

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- Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place.
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PART – A

1. a) Describe the use of scope access operator (::) and reference operator (&).
- b) What are the characteristics of constructors and destructors?
- c) Illustrate Abstract class with simple example.
- d) List different types of file opening modes in C++.
- e) What do you mean by re-throwing of an exception?

PART – B

UNIT – I

2. a) List the key concepts of OOP and illustrate briefly. 6 M
- b) Develop a program that asks the user for two integers and a character, 'A', 'S', or 'M'. Call one of three functions that adds, subtracts, or multiplies the user's integers, based on the character input. 6 M

OR

3. a) Create a Cake function with two input parameters namely the price of the Cake, the calorie count of the Cake. Write a main() function that prompt the user for field values. Echo the values, and then display the cost per calorie with Cake function. 6 M

- b) Illustrate passing parameters to functions with examples. 6 M

UNIT – II

4. a) Create a base class named Book. Data fields include title and author; functions include those that can set and display the fields. Derive two classes from the Book class: Fiction, which also contains a numeric grade reading level, and NonFiction, which contains a variable to hold the number of pages. The functions that set and display data field values for the subclasses should call the appropriate parent class functions to set and display the common fields, and include specific code pertaining to the new subclass fields. Write a main() function that demonstrates the use of the classes and their functions. 6 M
- b) How operator overloading is used to carry out binary operator overloading? Justify with an example. 6 M

OR

5. a) Create a class named MusicalComposition that contains fields for title, composer, and year written. Include a constructor that requires all three values and an appropriate display function. The child class NationalAnthem contains an additional field that holds the name of the anthem's nation. The child class constructor requires a value for this additional field. The child class also contains a display function. Write a main()function that instantiates objects of each class and demonstrates that the functions work correctly. 6 M

- b) Describe the use of public, private, and protected access specifiers with respect to inheritance. Provide an example. 6 M

UNIT-III

6. a) Develop a program to find the transpose of a matrix using pointers. 6 M
b) Illustrate the concept of polymorphism with a simple program. 6 M

OR

7. a) Develop a program to initialize two arrays having equal elements. Compute addition and subtraction of the respective elements of both these arrays and display them. 6 M
b) Illustrate the use of new and delete operators with examples. 6 M

UNIT – IV

8. a) Develop a program to read the file contents and display on console. 6 M
b) Illustrate class templates with more parameters using an example. 6 M

OR

9. a) Develop a program to merge the contents of two files. 6 M
b) Create a function template to display a value that is both preceded and followed by 10 asterisks on a line. Write a main() function that tests the function with character, integer, double, and string arguments. 6 M

UNIT – V

10. a) Develop a program to read a sentence from the user and identify frequency of vowels. 6 M
- b) Develop a program to accept 10 integers into an array. Check all numbers in the array while entering. When any negative number is found, throw a user defined exception “NegativeNumberException”. 6 M

OR

11. a) Illustrate string comparison and exchange with example programs. 6 M
- b) Develop a program to accept student marks of a student. If the user enters the marks less than 0 and greater than 100, raise a user defined exception “OutOfRangeException”. 6 M