UG Even Semester Examination, September, 2023

COMPUTER SCIENCE

(4th Semester)

Course No.: MCSCC-404

(Object Oriented Programming with C++)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

Answer any five questions, taking one from each unit.

UNIT-I

1. (a) What do you mean by Structured Analysis and Structured Design (SA/SD)? Explain. 10

   (b) Explain object-oriented modelling. 4

2. (a) What is JSD? Explain this design with its advantages and disadvantages? 9

   (b) What are the Advantages and Disadvantages of Structured Analysis? 5

UNIT-II

3. What is object-oriented programming? How it is different from procedure-oriented programming? 14

4. Explain the use of the following operation in C++ along with an example of each. 14

(i) && (ii) ??

(iii) ++ (iv) %

UNIT-III

5. (a) Explain the following terms with examples : 2x4=8

(i) Objects and Classes.

(ii) Inheritance and Polymorphism

(b) Write a program in C++ to find the sum of the first n natural numbers. 6

6. (a) Explain encapsulation in C++ with the help of examples. 4

(b) Consider a scenario where you have a function modify value () that needs to change the value of an integer variable called num. Discuss and compare two different ways to achieve this in C++; passing the variable by reference and using a pointer to a reference. Provide code examples for both approaches. 10

UNIT-IV

7. What do you understand by function overloading or functional polymorphism? Explain with the help of a program. 14

8. Design three classes student, test, and results, where result is inherited from test and test is inherited from student. Write possible functions to initialize the values. Also write a main function for execution by creating objects. 14

UNIT-V

9. (a) Explain the purpose of file streams in C++ (ifstream, ofstream). Provide code examples for opening and reading from a text file and writing data to a text file. 10

(b) Describe the difference between text files and binary files. In what scenarios would you choose one over the other? 4

10. (a) Write a C++ program that reads data from a text file named input.txt, calculates the sum of the numbers, and write the result to another file named output.txt. 8

(b) What is MFC, and how does it facilitate Windows GUI application development in C++? Provide an overview of its key components and their roles. 6

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