(6 pages)

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

Code No.: 7791       Sub. Code: WCSM 12

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023

First Semester

Computer Science – Core

OBJECT ORIENTED ANALYSIS AND DESIGN
AND C++

(For those who joined in July 2023 onwards)

Time : Three hours          Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1.  What is a common term used to describe the behavior of objects in object-oriented programming?

    (a) Characteristics       (b) Methods

    (c) Instances             (d) Variables

2.  The process of compartmentalizing the elements of an abstraction that constitute its structure and behavior is called as

    (a) Hierarchy             (b) Encapsulation

    (c) Modularity            (d) Entity Abstraction

3.  Which of the following is NOT a type of relationship among objects in OOAD?

    (a) Aggregation           (b) Composition

    (c) Association           (d) Inheritance

4.  Which of the following is an example of an inheritance relationship?

    (a) A car is a vehicle

    (b) A student is enrolled in a course

    (c) A bank has accounts

    (d) All of the above

5.  Which of the following is NOT a relationship type between classes?

    (a) Inheritance           (b) Association

    (c) Instantiation         (d) Aggregation

6.  Which of the following is NOT a key abstraction in object-oriented programming?

    (a) Classes               (b) Objects

    (c) Methods               (d) Variables

7.  Which of the following control structures is used to execute a block of code repeatedly while a condition is true?

    (a) if statement          (b) switch statement

    (c) for loop              (d) do....while loop

8. Which of the following is not a standard C++ library function?

    (a) cin          (b) cout

    (c) main        (d) sqrt

9. Which member can never be accessed by inherited classes?

    (a) Private member function

    (b) Public member function

    (c) Protected member function

    (d) All can be accessed

10. If a derived class object is created, which constructor is called first?

    (a) Base class constructor

    (b) Derived class constructor

    (c) Depends on how we call the object

    (d) Not possible

11. Which type of inheritance results in the diamond problem?

    (a) Single level     (b) Hybrid

    (c) Hierarchical     (d) Multilevel

12. Which of the following is an example of explicit type conversion?

    (a) int x = (int) 10.5;     (b) float y = (float)20;

    (c) char z = (char)'a';     (d) all of the above

13. Which C++ library is used for file operations?

    (a) iostream     (b) cstdlib

    (c) fstream     (d) string

14. What is a pure virtual function in C-H-?

    (a) A virtual function defined in a base class

    (b) A virtual function declared in a base class

    (c) Any function in a class

    (d) A function without definition in a base class

15. Which of the following operators is used to release memory allocated on the heap?

    (a) new        (b) delete

    (c) sizeof     (d) free

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

16. (a) Write the evolution of the object model.

Or

    (b) Classify the different kinds of abstraction.

17. (a) Design a class hierarchy for a bank system.

Or

    (b) Compare and contrast classes and objects.

18. (a) Construct the structure of C++ program.

Or

(b) Interpret the concept of recursion with example.

19. (a) Explain the relationship between subclass and super class in single inheritance.

Or

(b) Describe the parameterized constructors with example.

20. (a) Differentiate between class template and function template.

Or

(b) Explain the various operations on a file.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

21. (a) Explain the four major elements of object model.

Or

(b) Analyze the roles and responsibilities of the objects.

22. (a) Examine the relationship among the classes.

Or

(b) How object acts and reacts in terms of state change and message passing? Discuss.

23. (a) Compare and contrast *while* and *do-while* statements with example.

Or

(b) Categorize the various OOP's concepts in C++.

24. (a) Develop a C++ program that convert a floating point number to an integer using type convertion.

Or

(b) Compare the use of pointers and arrays in C++ for dynamic memory allocation.

25. (a) How do exception handling mechanism works in C++? Analyze.

Or

(b) Explain the process of open, read, write and close a file.

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