

B.E./B.TECH. Degree Examination, December 2020

Second Semester

**CS18202 – Object Oriented Programming**

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Which one of the following options is correct?
  - a. Friend functions can access public data members of the class
  - b. Friend functions can access protected data members of the class
  - c. Friend functions can access private data members of the class
  - d. All of the above
2. Which of the following is correct?
  - a. Base class pointer object cannot point to a derived class object
  - b. Derived class pointer object cannot point to a base class object
  - c. A derived class cannot have pointer objects
  - d. A base class cannot have pointer objects
3. Which one of the following cannot be a friend?
  - a. Function
  - b. Class
  - c. Object
  - d. Operator function
4. Why references are different from pointers?
  - a. A reference cannot be changed once initialized
  - b. No extra operator is needed for dereferencing of a reference
  - c. A reference cannot be made null
  - d. All of the above
5. Can destructors be overloaded? Justify.
6. Discuss the need for pure virtual function with an example.
7. Illustrate the various stream classes used for file handling.
8. How will you do string compare on ANSI string objects?

**PART B - (4 X16 = 64 marks)**

9. (a) (i) Elaborate on the various object oriented paradigms. Give suitable examples ( 8 )  
on how are they used in real world applications.

- (ii) Write a C++ program to create a student information system with roll number, name, department, 3 subject marks and credits. Calculate GPA and print all the student details. **(8)**

**(OR)**

- (b) (i) Write a C++ program to add two complex numbers using call by value and call by reference. **(8)**
- (ii) Write a C++ program with necessary data members, member functions and constructors for a super market billing system. **(8)**
10. (a) (i) Categorize the different constructors types. Interpret the usage of different constructors in an employee class. **(8)**
- (ii) Write a C++ program to overload binary operators +, >>, << using member function on a distance class with kilometres and metres as data members. **(8)**

**(OR)**

- (b) Discuss the application of multilevel and hierarchical inheritance in a library management system with suitable programs. **(16)**
11. (a) (i) Evaluate the importance of runtime polymorphism with suitable example program. **(8)**
- (ii) Develop an abstract class polygon from which derive triangle and rectangle classes. Each polygon should contain the function area() to calculate the area of them. Invoke the function area() to calculate the area using pointer of base class. **(8)**

**(OR)**

- (b) (i) Write a C++ program to implement linear search on different types of data using function template. **(8)**
- (ii) Write a C++ program to implement a vector class containing an array and size of array as data members. Find the minimum element in the vector using class template. **(8)**
12. (a) Illustrate how exception handling mechanisms try-catch-throw, rethrow, multiple-catch and catch-all can be used for handling exceptions with suitable example programs. **(16)**

**(OR)**

- (b) Elaborate on the components of the standard template library. Illustrate the vector and list containers with suitable example programs. **(16)**