Total No. of Questions : 8]

SEAT No. :

**P1528**

[Total No. of Pages : 2

**[6002]-157**

# S.E. (Computer Engineering) (Artificial Intelligence & Data Science) (Computer Science & Design Engineering)

## OBJECT ORIENTED PROGRAMMING (OOP)

## (2019 Pattern) (Semester - III) (Theory) (210243)

*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) ***Endsem exam based on 3, 4, 5, 6.***
2) ***Draw Neat and clean Diagram.***
3) ***Assume suitable data if necessary.***

***Q1)*** a) What is runtime polymorphism? How it is achieved in C++. Explain it along with example. **[5]**

b) Explain virtual base class and virtual function with example. **[6]**

c) Explain need of operator overloading. Write C++ program to demonstrate use of unary operator overloading. **[6]**

OR

***Q2)*** a) Explain polymorphism and types of polymorphism in C++. **[5]**

b) Explain what is type casting. Explain Implicit and explicit type of conversion with example. **[6]**

c) Write a program to overload insertion (<<) and extraction (>>) operator in C++. **[6]**

***Q3)*** a) What are various functions which are used to manipulate file pointers? Explain using example. **[7]**

b) Explain command line arguments in C++? Write program to explain the same. **[7]**

c) What are different file opening mode? **[4]**

OR

***Q4)*** a) Explain formatted and unformatted input and output functions used in C++ with example. **[7]**

b) What are stream classes and their use? Provide the hierarchy of stream classes in C++. **[7]**

c) Explain the use of command line arguments. If we want to pass command line arguments what will be prototype of main function and explain its arguments along with example. **[4]**

***P.T.O.***

***Q5)*** a) What is the power of templates in C++? Explain along with one example. **[5]**

b) Explain exception handling mechanism in C++? Write a program in C++ to handle "divide by zero" exception. **[6]**

c) Write a short note on typename and export keyword in C++. **[6]**

OR

***Q6)*** a) What is mean by user defined exception? Give one example. **[5]**

b) Explain class template using multiple parameters. Write a program in C++. **[6]**

c) How multiple catching is implemented in exception handling? **[6]**

***Q7)*** a) Explain the concept of the Standard Template Library (STL) in C++. What are its key components? **[7]**

b) Differentiate between sequence containers and associative containers in the STL. Provide examples of each. **[7]**

c) Discuss the advantages of using container adapters in the STL. Provide examples of container adapters. **[4]**

OR

***Q8)*** a) How can vectors and lists be used as sequence containers in the STL? Explain with a appropriate example. **[7]**

b) Explain the concept of iterators in the STL. Differentiate between iterator and pointers. **[7]**

c) Describe the process of using the STL algorithms for Quick sort. **[4]**

✡ ✡ ✡