Sub Code:ECS039

Paper Id: 110701 Roll No: | | | | | | | | | | | | | |

**B. TECH**
**(SEM VII) THEORY EXAMINATION 2019-20**
**OBJECT-ORIENTED SYSTEM AND C++**

***Time: 3 Hours*** ***Total Marks: 100***

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

**1. Attempt *all* questions in brief. 2 x 10 = 20**

a. Define programming paradigms. List the programming paradigms.
b. What is the advantage of C++ being a block-structured language?
c. When there is a Global variable and Local variable with the same name, how will you access the global variable? Write code.
d. What are C++ access specifiers?
e. Differentiate Malloc () vs new and Delete vs Free.
f. Differentiate Function overloading VS Operator Overloading.
g. What is the difference between reference and pointer?
h. List the vi editor components.
i. Differentiate Macro and Inline functions.
j. Compare virtual and pure virtual functions with example

## SECTION B

**2. Attempt any *three* of the following: 10x3=30**

a. Write a C++ program to assign some values to the member of class objects using pointer structure (→).
b. Discuss polymorphism. How polymorphism is implemented in C++? Discuss with suitable code. Differentiate virtual and pure virtual functions with example.
c. Explain how data conversion is done from one class to another class. Write a program in C++.
d. Distinguish between data abstraction and data encapsulation using suitable code.
e. Explain inheritance with its different types. Write a program in C++ to demonstrate multiple inheritances.

## SECTION C

**3. Attempt any *one* part of the following: 10x1=10**

a. Explain Links and Associations with diagram. Write a code in C++ for Links and Associations.
b. Explain Generalization and Inheritance with diagram. How it is related to each other? Write a code in C++ for Generalization and Inheritance.

**4. Attempt any *one* part of the following: 10x1=10**

a. Discuss event. Explain the types of event with example. How is Concurrency controlled?
b. Discuss State Machine diagram. What is Event and signals? Is any difference between Time diagram and state machine diagram? Explain.

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**5. Attempt any *one* part of the following: 10x1=10**

a. Discus OMT Methodologies. Define a class called employee with the following specifications:
**States**: Name, BP (Basic salary), DA (Dearness allowance), HRA (House rent allowance), salary
**Behaviors**:
**computeSal ()**: computes the salary
**readData ()**: accepts the data value
**dispSal ()**: prints the data on the screen
The salary is computed by the following formula:
Salary=BP+DA+HRA
Where DA and HRA are 110% and 35% of the BP respectively.
Write a program in C++ to demonstrate the default constructor, parameterized constructor and constructor overloading. The program reads the name and BP (basic salary) of the employee and print the salary.

b. Discuss Functional Models. How Data flow diagrams helps? Specify its Operations and Constraints. Draw a DFD for issue a book in library.

**6. Attempt any *one* part of the following: 10x1=10**

a. Explain virtual base class in inheritance. Define a class called student which models the following states and behaviors of a student:
**States**: Name, Roll, Marks, Grade
**Behaviors**: Read_data (), Display_data (), Compute_grade ()
Write a program in C++ for demonstration to compute the grade as per the following rules:

| Marks | Grade |
|---|---|
| >=50<60 | D |
| >=60<70 | C |
| >=70<80 | B |
| >=80 | A |

b. Differentiate between constructors and destructors. Explain the use of constructors and destructor with suitable examples. Discuss copy constructor with code.

**7. Attempt any *one* part of the following: 10x1=10**

a. Differentiate UNIX and LINUX operating system. Explain file system of Unix/Linux.

b. Discuss shell environment. Explain basic file attributes, and system administration. Write the step to compile and run a C++ program in shell.