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B.TECH
(SEM V) THEORY EXAMINATION 2021-22
OBJECT ORIENTED SYSTEM DESIGN

Time: 3 Hours**Total Marks: 100****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION-A****1. Attempt all questions in brief.****2X10=20**

- a. Differentiate between link and association.
- b. What is an abstract class? Is it possible that an abstract class is inherited by another class?
- c. Draw a state diagram for electric bulb.
- d. When do we use the protected visibility specifier to a class member?
- e. When will you make a function inline? Why?
- f. Define Destructor. Why do we use a destructor in a program?
- g. What is the use of Scope resolution operator?
- h. What is a Candidate key?
- i. What is the use of friend function in C++?
- j. What is information hiding?

SECTION –B**2. Attempt any three parts of the following:****10X3=30**

- a. What is a Constructor? Write down the different characteristics of a constructor. Write a program in C++ for constructor overloading.
- b. What is an inline function? Why do we use inline functions in our program? Write a program in C++ for inline function.
- c. Explain object oriented programming. What are the main advantages of object oriented programming over procedural programming? Write a program in C++ by creating a class integer and write a function that prints all the prime numbers from the class.
- d. Explain all basic concepts of object oriented programming
- e. What is an inheritance? Explain the different types of it .Write a program in C++ for multiple inheritance.

SECTION-C**3. Attempt any one part of the following:****10X1=10**

- (a) What is polymorphism? Differentiate between runtime polymorphism and compile time polymorphism.
- (b) What is operator overloading? Write a program in C++ for binary operator overloading.

4. Attempt any one part of the following:**10X1=10**

- (a) A farmer wants to cross the river in a boat along with a bag of grass, a goat and a lion. Only one things can be carried in the boat at a time. If the goat is left alone with the grass the grass will be eaten. If the goat is left along with the lion, the goat will be eaten.
 - (i) Prepare a scenario in which everything is safely transported across the river.
 - (ii) Prepare the event trace diagram for the above problem.
- (b) Define the term multiplicity and quantification with suitable examples.



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5. Attempt any *one* part of the following:

10X1=10

- (a) What is UML? List all building blocks of UML. Explain all types of things used in UML .
- (b) Explain virtual base class with the help of an example.

6. Attempt any *one* part of the following:

10X1=10

- (a) Discuss implicit and explicit type conversion in detail.
- (b) Explain generalization, aggregation and association in detail.

7. Attempt any *one* part of the following:

10X1=10

- (a) What is friend function in C++? Write a program in C++ to implement friend function.
- (b) Explain the following concepts in C++ by taking a suitable example:
 - (i) This pointer
 - (ii) Array of objects

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