Subject Code: KCS054

PAPER ID-410485

Roll No: | | | | | | | | | | | | | |

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