



Roll No:

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**BTECH**  
**(SEM V) THEORY EXAMINATION 2024-25**  
**OBJECT ORIENTED SYSTEM DESIGN**

TIME: 3 HRS

M.MARKS: 100

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

**SECTION A**

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

Q no.	Question	CO	Level
a.	Define object identity with suitable example.	1	K2
b.	Describe the purpose of Class diagram in UML.	1	K2
c.	Differentiate link and association with suitable example.	2	K2
d.	Explain the applications of use case diagrams.	2	K2
e.	Differentiate between procedural and object oriented programming.	3	K2
f.	List the benefits of using Jackson Structured Development (JSD).	3	K1
g.	Explain the purpose of a namespace in C++ and how does it help in organizing code	4	K2
h.	Explain the use of typecasting.	4	K2
i.	Compare single inheritance and multiple inheritance.	5	K2
j.	Differentiate between virtual and pure function.	5	K2

**SECTION B**

**2. Attempt any three of the following: 10 x 3 = 30**

a.	Describe the importance of modeling in software development. Also describe the key principles of modeling in object-oriented design.	1	K2
b.	Describe the role of class diagram in object modelling. Also explain association, aggregation, and composition relationship with the help of class diagrams.	2	K2
c.	Explain key features of an object oriented programming language. Also explain the terms reusability and extensibility used for a programming language.	3	K2
d.	Define a Constructor. Write down the different characteristics of a constructor. Write a program in C++ for constructor overloading.	4	K3
e.	Define the types of inheritance used in C++. Write suitable code to demonstrate multiple and multilevel inheritance.	5	K3

**SECTION C**

**3. Attempt any one part of the following: 10 x 1 = 10**

a.	Explain the role of UML in object-oriented modeling. Explain the different views in the architecture of UML	1	K2
b.	Explain polymorphism with suitable example. Differentiate between compile time and runtime polymorphism.	1	K2

**4. Attempt any one part of the following: 10 x 1 = 10**

a.	Illustrate the significance of collaboration diagram and also draw a neat collaboration diagram for reserving a room in a hotel from its website.	2	K2
b.	Describe following, a. Activity diagrams b. State machines	2	K2



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**5. Attempt any one part of the following: 10 x 1 = 10**

a.	Differentiate between Object-Oriented Design (OOD) and Structured Design (SA/SD).	3	K2
b.	Describe the method of translating the classes into data structures when using a non-object-oriented language.	3	K2

**6. Attempt any one part of the following: 10 x 1 = 10**

a.	Differentiate between Macro and inline function. Describe the purpose to use inline functions in C++ programs. Write a program in C++ for inline function.	4	K3
b.	Describe a friend function used in C++ programming. Write a C++ program to demonstrate the application of friend function.	4	K3

**7. Attempt any one part of the following: 10 x 1 = 10**

a.	Explain operator overloading. Write a program in C++ to demonstrate the application of operator overloading.	5	K3
b.	Describe the purpose of the this pointer in C++. Write a program in C++ to access members of an object.	5	K3