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Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VII - THEORY EXAMINATION (2024 - 2025)

Subject: Object Oriented Programming

Time: 3 Hours Max. Marks: 100

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A 20

1. Attempt all parts:-

1-a. The UML supports event-based modeling using _____ diagrams.(CO1,K1) 1

(a) Deployment

(b) Collaboration

(c) State chart

(d) All of the mentioned

1-b. The main aim of OOPS is to (CO1,K1) 1

(a) bind the code and data

(b) bind the class and object

(c) bind the code only

(d) bind the data only

1-c. Single inheritance, Multiple inheritance, and Aggregation comes under _____ (CO2,K2) 1

(a) Modularity

(b) Typing

(c) Hierarchy

(d) None of the mentioned

1-d. The class from which the subclass is derived is called a (CO2,K3) 1

(a) derived class

(b) extended class
(c) super class
(d) child class

1-e. The feature by which one object can interact with another object is _____ (CO3,K2) 1

(a) Message reading
(b) Message Passing
(c) Data transfer
(d) Data Binding

1-f. Abstraction is classified into _____ types.(CO3,K1) 1

(a) 4
(b) 3
(c) 2
(d) 1

1-g. Modulus operator, %, can be applied to which of these? (CO4,K1) 1

(a) Integers
(b) Floating – point numbers
(c) Both Integers and floating – point numbers
(d) None of the mentioned

1-h. Whenever an object is assigned to a variable or passed to a method _____ (CO4,K1) 1

(a) Actually the objects aren't used
(b) Actually only the objects are used
(c) Actually a pointer to an object is used
(d) Actually copy of object is used

1-i. In method overriding, the overridden method in the subclass must have:(CO5,K1) 1

(a) A different return type
(b) The same return type
(c) A different method name
(d) A different access modifier

1-j. In Java, can a subclass call the overridden method of the superclass? (CO5,K1) 1

(a) Yes, using the this keyword
(b) Yes, using the super keyword
(c) No, it is not allowed
(d) Only if the superclass is abstract

2. Attempt all parts:-

2.a. Explain the role of UML in modeling. (CO1,K2) 2

2.b. Differentiate between object and instance.(CO2,K2) 2

2.c.	Define dynamic binding.(CO3,K1)	2
2.d.	State one rule for naming identifiers in Java.(CO4,K1)	2
2.e.	Explain the concept of "superclass" in inheritance.(CO5,K2)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Explain Architecture of UML in detail. (CO1,K5)	6
3-b.	Differentiate between class diagram and object diagram.(CO1,K2)	6
3-c.	Draw a sequence diagram for the cooling soft drink.(CO2,K1)	6
3-d.	Explain different types of interaction diagrams in UML. (CO2,K5)	6
3.e.	Explain the concepts of Polymorphism with suitable example. (CO3,K5)	6
3.f.	Briefly discuss why garbage collection is essential in programming languages and what problems it aims to solve.(CO4,K2)	6
3.g.	Explain the concept of "Write Once, Run Anywhere" in Java.(CO5,K5)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Explain class diagram?Draw a class diagram of class customer.(CO1,K5,K1)	10
4-b.	Explain benefits of information hiding.Differentiate between data abstraction and data hinding.(CO1,K5,K2)	10

5. Answer any one of the following:-

5-a.	Explain types of parameter passing.Differentiate between actual and formal parameter.(CO2,K5,K2)	10
5-b.	Explain inheritance.Write a program to show inheritance in oop.(CO2,K5,K1)	10

6. Answer any one of the following:-

6-a.	Explain advantages of class.How a class can fulfill the features of object oriented programming.(CO3,K5)	10
6-b.	Describe the concept of extensibility in object-oriented programming. Explain how designing for extensibility differs from designing for reusability.(CO3,K1,K5)	10

7. Answer any one of the following:-

7-a.	Explain the purpose of the While loop in Java. Provide an example of how it can be used and discuss scenarios where a While loop is more suitable than other loops.(CO4,K5)	10
7-b.	Explain the role of data types in Java variables. Provide examples of different data types and discuss their significance in variable declaration.(CO4,K5,K3)	10

8. Answer any one of the following:-

8-a.	Differentiate between compile-time (static) and runtime (dynamic) polymorphism. Explain how method overloading represents compile-time polymorphism and how method overriding represents runtime polymorphism.(CO5,K2,K5)	10

8-b. Discuss the concept of method overloading in Java. Explain how it allows a class to have multiple methods with the same name but different parameters.Provide examples to illustrate method overloading.(CO5,K2,K5,K3) 10