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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 following is the functionality of 'Data Abstraction'?(CO1,K1) 1

(a) Reduce Complexity

(b) Binds together code and data

(c) Parallelism

(d) None of the mentioned

1-b. Grouping of information is (CO1,K1) 1

(a) Inheritance

(b) Encapsulation

(c) Abstraction

(d) Polymorphism

1-c. In multilevel inheritance, which is the most significant feature of OOP used? (CO2,K1) 1

(a) Code efficiency

(b) Code readability

(c) Flexibility

(d) Code reusability

1-d. A class that is derived from another class is called a (CO2,K1) 1

(a) super class

(b) sub class

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(c) parent class

(d) base class

1-e. In which access should a constructor be defined, so that object of the class can be created in any function? (CO3,K1) 1

(a) Any access specifier will work

(b) Private

(c) Public

(d) Protected

1-f. In which of the following mechanisms, types of all variables and expressions are not known until runtime (CO3,K1) 1

(a) Strong Typing

(b) Weak Typing

(c) Static Binding/ early binding

(d) Dynamic Binding/ late binding

1-g. An expression involving byte, int, and literal numbers is promoted to which of these? (CO4,K1) 1

(a) int

(b) long

(c) byte

(d) float

1-h. Literal can be of which of these data types? (CO4,K1) 1

(a) integer

(b) float

(c) boolean

(d) all of the mentioned

1-i. The default constructor called in a subclass if the superclass has a parameterized constructor.(CO5,K1) 1

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(a) Subclass must explicitly define a constructor

(b) Default constructor of the superclass is called

(c) It causes a compilation error

(d) Superclass constructor is inaccessible

1-j. The compile-time polymorphism in Java is .(CO5,K1) 1

(a) It is another term for method overloading.

(b) It is another term for method overriding.

(c) It is the ability to select the method to be executed at runtime.

(d) It is the ability to select the method to be executed at compile time.

2. Attempt all parts:-

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2.a.	Explain Modelling concepts.(CO1,K5)	2
2.b.	Differentiate between operation and methods.(CO2,K2)	2
2.c.	Define message passing.(CO3,K1)	2
2.d.	Define what an identifier is in the context of Java programming.(CO4,K1)	2
2.e.	Differentiate between single and multiple inheritance.(CO5,K2)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Explain different use of models in real life with a diagram.(CO1,K5)	6
3-b.	Define class diagram and Draw a class diagram of class customer.(CO1,K1)	6
3-c.	Differentiate between normal class and active class.(CO2,K2)	6
3-d.	Explain different use of deployment diagram.(CO2,K5)	6
3.e.	Differentiate between instance variables and local variables.(CO3,K2)	6
3.f.	"Explain the difference between 'int' and 'double' data types in Java."(CO4,K5)	6
3.g.	Explain the role of the Java Virtual Machine (JVM) in Java programs?(CO5,K5)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Describe architecture of UML with diagram.Explain each element in detail.(CO1,K2,K5)	10
4-b.	Describe procedural programming approach and differentiate between object oriented programming and procedural programming approach. (CO1,K2)	10

5. Answer any one of the following:-

5-a.	Explain message passing in object oriented programming.How many types of message.(CO2,K5)	10
5-b.	Explain role of UML diagram.Differentiate between sequence diagram,collaboration diagram and activity diagram.(CO2,K5,K2)	10

6. Answer any one of the following:-

6-a.	Imagine you have to develop a complex software system for a car rental company. The system needs to manage a fleet of vehicles, customer information, reservations, and billing. You decide to use Object-Oriented Programming(OOP) principles to design and implement this system. Please provide a detailed plan and explanation for how you would approach this project using OOP concepts.(CO3,K3)	10
6-b.	In the context of object-oriented programming, discuss the importance of reusability. How can reusability be achieved through techniques such as inheritance and composition? Provide examples of how reusing code can lead to more efficient and maintainable software systems.(CO3,K3)	10

7. Answer any one of the following:-

7-a.	Describe the For Each loop in Java and discuss its advantages over traditional For loops. Provide an example of using the For Each loop with an array or	10

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collection.(CO4,K2,K3)

7-b. Discuss how well-structured control statements contribute to code efficiency and readability. Provide examples and discuss best practices for using control statements to enhance code quality.(CO4,K2,K3) 10

8. Answer any <u>one</u> of the following:-

8-a. Explain the concept of inheritance in Java. Describe how it allows one class to inherit the properties and behaviors of another class. Provide an example of a simple inheritance relationship and discuss how it promotes code reuse and modularity.(CO5,K5,K2,K3) 10

8-b. Explain the purpose and syntax of the try-catch block in Java. Discuss how it allows the programmer to handle exceptions gracefully. Provide examples to illustrate the use of try and catch blocks, including scenarios where exceptions are caught and handled.(CO5,K5,K2,K3) 10

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