

Satyug Darshan Institute of Engineering & Technology, Faridabad

Department of Computer Science & Engineering

Academic year 2025-26

Programme: B. Tech	Year & Semester: 2025-26 & 5 th
Course Name: OBJECT ORIENTED PROGRAMMING	Course Code: PCC-CS-503
Prepared by: Ms. Seema	

Unit I

Short answer questions

Q.N.	Question	KL
1	Define decomposition in software design.	1
2	Define abstraction in programming.	1
3	Explain parameterization as an abstraction mechanism.	2
4	List any two kinds of abstraction.	1
5	Explain the role of an abstraction function in ADT implementation.	2

Long answer questions

Q.N.	Question	KL
1	Explain the concepts of decomposition and abstraction and discuss their importance in software development.	2
2	Illustrate different abstraction mechanisms such as parameterization and specification with suitable examples.	3
3	Analyze various kinds of abstractions —procedural, data abstraction, and type hierarchies—with examples.	4
4	Explain the concept of iteration and demonstrate its use in implementing repeated operations.	3
5	Evaluate ADT implementation by explaining concrete state space, concrete invariant, and abstraction function .	5

Unit II

Short answer questions

Q.N.	Question	KL
1	Define encapsulation in object-oriented programming.	1
2	Define object identity .	1
3	Explain the concept of polymorphism in OO design.	2
4	Define inheritance in object-oriented programming.	1
5	Explain the role of type checking in an object-oriented language.	2

Long answer questions

Q.N.	Question	KL
1	Explain encapsulation and object identity and discuss their significance in object-oriented design.	2
2	Illustrate polymorphism through inheritance using a suitable example.	3

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3	Analyze the implementation of OO language features such as classes, objects, and variables .	4
4	Examine how procedures are implemented as methods and as objects , including the use of polymorphic procedures and templates .	4
5	Evaluate the importance of exception handling and memory management in object-oriented systems.	5

Unit III

Short answer questions

Q.N.	Question	KL
1	Define a design pattern in software engineering.	1
2	List the three main classifications of design patterns .	1
3	Explain the purpose of the Singleton pattern .	2
4	Explain the role of the Factory Method pattern .	2
5	Define the Observer pattern .	1

Long answer questions

Q.N.	Question	KL
1	Explain the introduction and classification of design patterns with suitable examples.	2
2	Illustrate the Abstract Factory pattern and explain how it differs from the Factory Method pattern .	3
3	Analyze the Structural design patterns—Bridge and Flyweight —highlighting their structure and use cases.	4
4	Explain the working of the Iterator pattern with a suitable example.	3

Unit IV

Short answer questions

Q.N.	Question	KL
1	Define generic types in Java.	1
2	Explain wildcards in generics.	2
3	Explain the relationship between generics and subtyping .	2
4	List any two classes that implement the List interface .	1
5	Explain the purpose of the Comparable interface in object ordering.	2

Long answer questions

Q.N.	Question	KL
1	Explain simple generics and generic methods , highlighting their advantages in type safety.	2
2	Illustrate the use of wildcards (? extends, ? super) with suitable examples to explain covariance and contravariance.	3
3	Analyze the Set, List, Queue, and Deque interfaces , comparing their characteristics and typical use cases.	4

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4	Examine the Map interface and analyze the differences between HashMap, Linked HashMap, and TreeMap .	4
5	Evaluate object ordering using Comparable and Comparator and explain their role in SortedSet and SortedMap interfaces.	5

Unit V

Short answer questions

Q.N.	Question	KL
1	Define Swing in Java.	1
2	Name any two Swing components .	1
3	Explain the purpose of layout managers in Swing.	2
4	Explain JPanel .	2
5	Explain the role of an event listener in Swing applications.	2

Long answer questions

Q.N.	Question	KL
1	Explain various Swing components and their role in building graphical user interfaces.	2
2	Illustrate how components are laid out in a container using layout managers such as Flow Layout, Border Layout, or Grid Layout.	3
3	Analyze the use of JPanel in organizing Swing components and improving GUI design.	4
4	Explain Look and Feel in Swing and demonstrate how it can be changed at runtime.	3

Unit VI

Short answer questions

Q.N.	Question	KL
1	Define functional requirements with an example.	1
2	Explain an ER diagram in data modelling.	2
3	State any two types of software design patterns.	1
4	Differentiate between compiled and interpreted languages.	2
5	Mention any two types of software testing techniques.	1

Long answer questions

Q.N.	Question	KL
1	Explain the process of requirement gathering and its importance in software development.	2
2	Draw a simple ER diagram for a library management system and explain the relationships.	3
3	Compare top-down and bottom-up design approaches with examples.	4
4	Explain modular programming and its benefits in large software projects.	2

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5	Describe the difference between unit testing, integration testing, and system testing with suitable examples.	4
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