

**2023
(Session : 2020-23)**

Time : 3 hours

Full Marks : 80

*Candidates are required to give their answers in
their own words as far as practicable.*

The questions are of equal value.

Answer any five questions.

1. Describe the structure of a typical Java Program.
Distinguish between C++ and Java.
2. Distinguish between for loop and do while loop in Java. Write a Java Program to print all Prime Number from 2 to n for given number.
3. Explain class and object in Java. Write a Java Program to calculate area and perimeter of a rectangle.

- A. What is Multilevel Inheritance in Java ? Write a Java Program to show the concept of Multilevel Inheritance with suitable example.
- ✓ 5. What is multithreading in Java ? Explain life cycle of a thread with diagram.
6. Explain Static Variable and Static Member Function. Write a Java Program to demonstrate the concept of Static Variable and Static Member Function.
- ✓ 7. What is Method Overloading ? Write a Java Program to print area of a circle, square and rectangle using Method Overloading.
- ✓ 8. What is String ? Write any five string function used in Java with Syntax. Write a Java Program to enter a string. Check that given string is palindrome string or not.
9. Explain Java API packages. Write down the steps to create and accessing a package with suitable example.

10. Write notes on any two of the following :

- (a) Java Virtual Machine (JVM)
- (b) Data Abstraction
- (c) Final Variable and Methods
- (d) Compile time errors Vs Run time errors



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1. *What are Interactive Graphics and Passive Graphics ? Discuss working of Interactive Computer Graphics.*
2. *What is color cathode ray tube monitor ? Explain the functioning of color CRT with proper diagram.*
3. *Write a program to draw Chess Board.*
4. *Write down the steps for circle generating algorithm.*

5. What are the major application areas of Computer Graphics.
6. Write a program to draw a line using DDA algorithm.
7. Explain Bresenham's algorithm and Integer Bresenham's algorithm.
8. Explain the transformation between coordinate system.
9. Explain representing a polygonal Net Model, Bezier Curves and Surfaces.
10. Write short notes on any two of the following :

 - (a) Hidden Line and Surface Scan Line
 - (b) B-splines
 - (c) Text Clipping
 - (d) Arc Generation Algorithms



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1. What are the different categories of system programs ? Explain in detail.
2. Define Semaphore. How semaphores can be used to solve the critical section problem ?
3. What is process state ? Explain the state transition diagram in detail.
4. What is CPU Scheduling ? Explain all types of CPU scheduling algorithm in detail.

5. What is Secondary Storage ? What are four main types of secondary storage ? Explain all four types of secondary storage in details.
6. What is Operating System ? What are the main functions and objectives of an OS ? Explain.
7. What is System Call ? Explain the types of system call in detail.
8. What is thread ? Differentiate between process and thread in detail.
9. What is shell in Unix ? Give the functions of shell in unix OS.
10. Define Kernel. Explain the role of "Kernel" and "Shell" in Unix in detail.



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Answer any five questions.

1. Define the Layers of Software Engineering.
2. Why Software Design is an important process ?
Discuss.
3. What do you mean by System Analysis ? Explain
the various principles of structured analysis.
4. What do you mean by test case design ?
Differentiate between white box and black box
testing in detail with the help of example.

5. What is procedural design ? Explain it with the help of object oriented concepts.
6. What is V & V Model with advantage over other model ?
7. What do you mean by software cost estimation ? Why software cost estimations are not so correct ? Discuss the COCOMO model for cost estimation in detail.
8. What are the roles and responsibilities of ?
- (a) Tester
 - (b) System Analyst
 - (c) Coder
 - (d) Software developer
9. What is a Software Design ? Define its type with example.
10. What is the role of metrics and measurements in software development ? Give examples of at least 3 metrics and the purpose they serve.