

Bharati Vidyapeeth's
Institute of Computer Applications and Management
A-4, Paschim Vihar, New Delhi-63

MCA- FIRST SEMESTER, Model Test Paper - I

Paper Code: MCA - 109 Subject: Java Programming

Time: 3 Hours

Maximum Marks: 75

Note: Attempt FIVE questions in all. Question No. 1 is compulsory. Choose 1 from Question from each unit.

- 1. Answer all the following questions briefly:- 2.5 x 10 = 25
(a) Analyze the 'Happens-before ordering'. State the 5 rules of this ordering. 2.5
(b) Compose a short code to parse a text file in Java using external libraries. 2.5
(c) Defend through code the difference between Access Specifier, Access Qualifiers and Access Modifiers. 2.5
(d) Elaborate how does JIT Compiler peek in the execution process to perform optimizations? 2.5
(e) Elaborate Volatility. Explain the 4 goals of volatility focusing on its relation with Atomicity. 2.5
(f) Estimate how 'Transient' keyword behaves with static and final non-access modifiers. 2.5
(g) Construct and explain the Exception class/interface hierarchy. 2.5
(h) Identify all OOPs features (implemented through code in java) in the object 'Stone'. 2.5
(i) Discuss is the significance of Sandbox Model of Security? 2.5
(j) Assess does final, finally and finalize differ? Elaborate with short code snippets. 2.5

UNIT - I

- 2. (a) Examine in depth the format of .class file in Java. What is the significance of Magic Number? Mention different ways to inspect a .class file with steps. 6
(b) Determine where is the String Literal Pool located. Discuss the problems and consecutive solutions with String Class and String Literal Pool. 6.5
3. (a) Elaborate the different Levels of Abstraction present in Java. Which constructs are used to relate to each level? Elaborate extension/implementation relation between Abstract Class, Concrete Class and Interfaces through short code snippets. 6
(b) Formulate the significance of Garbage Collector. Explain various levels of GC and how objects become eligible for GC in java heap memory. 6.5

UNIT - II

- 4. (a) Dissect Polling. What are the solutions that Java provides for polling problem in multithreading? Why aren't wait(), notify() and notifyAll() methods of Thread Class. Give a short code snippet to show the use of wait() and join()? 6
(b) Estimate does java implement the concept of Object Persistence. What were the prime motivations for Serialization? How does Serializable Interface differ from Externalizable Interface? 6.5

5. (a) Discover Race Condition in multithreading. How does it lead to the need for Concurrency Control? Explain different Synchronization Mechanisms and pros and cons of each with code. 6
- (b) Explain the *Three-way Handshake* in TCP/IP sockets. What are factory methods? How are they used in InetAddress Class? Name some common factory methods in socket programming. 6.5

#### UNIT - III

6. Explain in detail the Delegation Event Model of Event Handling that is to be used with AWT and Java Swings. Compare the model in both scenarios. 12.5
7. Interpret your understanding of Java Beans. Explain the different types of Beans available and. How do you pack a Bean using JAR tool. 12.5

#### UNIT - IV

8. Explain the JDBC architecture. Differentiate between 1 Tier and 2-Tier architecture of the same. 12.5
9. Elaborate in detail the concept of Remote Method Invocation (RMI). Discuss the significance of Marshalling and Un-marshalling in the RMI concept. 12.5