



**MCA DEGREE EXAMINATIONS: DEC 2022**

(Regulation 2020)

First Semester

**MASTER OF COMPUTER APPLICATIONS**

P20CAT1004 : Programming in Java

**COURSE OUTCOMES**

- CO1:** Apply the fundamental core java, packages, database connectivity for computing  
**CO2:** Implement Java programs.  
**CO3:** Make use of hierarchy of Java classes to provide a solution to a given set of requirements.  
**CO4:** Use the frameworks JSP, Hibernate, Spring.  
**CO5:** Design and implement server-side programs using Servlets and JSP.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

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|---|-----|-------------------|
| 1. What are the features of Java Language?                                    | CO1 | [K <sub>1</sub> ] |
| 2. Write a Java program to find and count number of 'a's in the given string. | CO2 | [K <sub>2</sub> ] |
| 3. Differentiate Array and Collection in Java.                                | CO2 | [K <sub>3</sub> ] |
| 4. List any two Annotations pre-defined by Java.                              | CO3 | [K <sub>3</sub> ] |
| 5. List the role of System.err in Java.                                       | CO3 | [K <sub>3</sub> ] |
| 6. What is Rowset?  | CO3 | [K <sub>1</sub> ] |
| 7. Differentiate Get and Post Method of a Servlet.                            | CO4 | [K <sub>3</sub> ] |
| 8. List any two advantages of Hibernate Framework.                            | CO4 | [K <sub>1</sub> ] |
| 9. What are ParNew and Def New Garbage collectors?                            | CO5 | [K <sub>3</sub> ] |
| 10. What is sliding window protocol?  | CO5 | [K <sub>2</sub> ] |

**PART B (6 x 5 = 30 Marks)**

11. Explain the concept of inheritance and its types. CO1 [K<sub>1</sub>]
12. Explain the hierarchy of the Collection framework in Java. CO2 [K<sub>2</sub>]
13. Explain in detail about the components of JDBC Application Interface. CO3 [K<sub>2</sub>]
14. Explain how to implement user-defined exception handling in Java. CO3 [K<sub>3</sub>]
15. What is spring boot? Explain the features of Spring Boot. CO4 [K<sub>2</sub>]
16. Explain in details about the terminologies of Java Network. CO5 [K<sub>1</sub>]

**Answer any FIVE Questions**

**PART C (5 x 10 = 50 Marks)**

17. Explain how interface is used to achieve multiple Inheritances in Java. CO1 [K<sub>2</sub>]
18. Explain how HashSet is implemented in Java. And also explain how the Object is stored and retrieved using HashSet. CO2 [K<sub>4</sub>]
19. Create a Thread using Java Lambda Expressions. Explain. CO3 [K<sub>4</sub>]
20. Write a program to implement the remote interface for calculating the reward points for the each purchase by the customer and explain. CO4 [K<sub>4</sub>]
21. Write a java program to sort the details of the Customer class based on the customer\_id and product\_id using Comparator Interface. Explain. CO5 [K<sub>4</sub>]
22. What is Datagram? Explain how datagram is implemented using Java. CO5 [K<sub>2</sub>]

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