

(Please write your Exam Roll No.)

Exam Roll No

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

THIRD SEMESTER [MCA] Internal Examination, September 2018

Paper Code: MCA -205	Subject: Java Programming
Time: 2 Hours	Maximum Marks: 45
Note: Attempt THREE questions in all. Question No. 1 is compulsory and attempt one question from each section.	

1. Answer all the following questions briefly:- 1.5 x 10 = 15
- (a) Illustrate how do reference variables work and how do they differ from instance variables? 1.5
 - (b) Discuss the aim of a Thread Local Class and how is it different from a String Buffer Class. 1.5
 - (c) 'Code cleanup is done in finally block as it has guarantee of execution'. Validate the statement and provide reasons for your answers. 1.5
 - (d) Estimate the minimum number of threads required to create a deadlock? Explain with the help of code snippet. 1.5
 - (e) Examine the concept volatility. Explain the 4 goals of volatility focusing on its relation with atomicity. 1.5
 - (f) Discuss what are Monitors? How does the scheduler work with monitors in advent of Context Switching? 1.5
 - (g) Explain the terms serialVersionUID and SerialVer and its significance in Serialization. 1.5
 - (h) Explain the 'Happens-before ordering'. State the 5 rules of this ordering. 1.5
 - (i) Identify all OOPs features (implemented through code in java) in the object 'Potato Chips' 1.5
 - (j) Interpret the behavior of transient keyword when used with- 1.5
 - 1. Static Variables
 - 2. Final Constants

UNIT - I

2. (a) Discuss the need class nesting? Draw the Inner Classes Hierarchy. Give short code snippets to illustrate: 5
 - 1. Static Inner Class
 - 2. Method Local Inner Class
- (b) Create a Ragged Array of 5 rows each of which's column is input by the user. User enters elements in the array. Loop through the array(also by making use of for each loop), to calculate and display each row's sum at the end of each row. 5
- (c) Create a class Book having data members (bookId, bookTitle, bookAuthor). Create 2 identical book objects book1 and book2 and validate them to be same using .equals(). Create 3 more book objects book3, book4 and book5 and put all objects in an array of objects 'books'. Sort this array of objects 'books' using Comparable Interface. 5
3. (a) Explain Polling. What are the solutions that Java provides for polling problem in multithreading? Why aren't wait(), notify() and notifyAll() methods of Thread 5

- Class? Give a short code snippet to show the use of wait() and join().
- (b) Create a Custom Exception called NullRaised that prints a custom error message- *You Raised a Null* each time user executes a statement `int i=null` inside another Class implementing custom exception. 5
- Note: Be mindful of NullPointerException, modify code accordingly.
- (c) Create a class Tape having data members (tapeId, tapeTitle, tapeSinger). Create 2 identical tape objects tape1 and tape2 and convert them to their string equivalents using `.toString()`. Create 3 more tape objects tape3, tape4 and tape5 and put all objects in an array of objects 'tapes'. Sort this array of objects 'tapes' using Comparator Interface. 5

UNIT - II

4. (a) Elaborate how java implements the concept of Object Persistence. What were the prime motivations for Serialization? How does Serializable Interface differ from Externalizable Interface? 5
- (b) You have a file 'TweetText.txt' that has some textual data. Write a code snippet to read all lines from this file and copy only even line numbers into another file 'EvenTweets.txt' using *BufferedInputStream* and *BufferedOutputStream*. 5
- (c) Discuss the concept of TCP Socket. Explain essential classes for TCP Socket Programming. Draw the socket interaction workflow. 5
5. (a) 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. 5
- (b) You have a file 'Numeric.txt' that has some integer numbers inscribed with random text. Open this file and sum the numbers in each line. Copy line by line sum in another file 'SumNumbers.txt'. Make use of *DataInputStream* and *DataOutputStream* classes. 5
- (c) Determine the used of Datagram Packet. Draw the client/server socket interaction flow in UDP and explain the socket working in detail. 5

***** Good Luck! *****