2022

(July)

M.C.A

Paper Code: MCA-0805.1

(Java Programming)

(Theory)

Full Marks: 75

Time: 3 Hours

(The figures in the margin indicate full marks for the question)

Answer ONE question from each UNIT

UNIT-I

1. a) What gives Java its 'write once run anywhere' nature? Explain 'public static void main (String args[ ])' in Java. (2+3=5)
   b) Write down the differences between static variable and instance variable. Can we override an instance variable? (2+2=4)
   c) What is the significance of Java virtual machine? What are the differences between JDK and JRE? (2+4=6)
   d) What is an anonymous object? What are the differences between static and non-static inner nested classes? (2+3=5)

2. a) Discuss the various access specifiers for Java classes. How can we execute any code even before main method? (4+2=6)
   b) Explain the differences between the following two String declaration: (4)

```
String s = "NEHU";
String s = new String("NEHU");
```

   c) What is the significance of *final* keyword? What impact does it have on a variable, method and class? (2+4=6)
   d) What is the significance of static variable/method? Can we override a static method? (2+2 =4)

UNIT-II

3. a) What are the different types of inheritance mechanisms supported by Java? Explain. (6)
   b) Why do we use interface? Write down the differences between abstract class and interface. (2+4=6)
   c) Differentiate between the Thread class and Runnable interface for creating a Thread. What is the purpose of sleep() method? Describe the significance of *System.out.println*. (4+2+2=8)

4. a) What is polymorphism? Explain how method/function overloading can be achieved. What are the advantages of method overloading? (2+4+2 =8)
   b) What are the uses of *super* keyword? Explain the use of *dynamic method dispatch* mechanism to

achieve run time polymorphism in Java. (2+5=7)

c) What is a thread? Explain how *Runnable interface* can be used to create thread. (2+3=5)

UNIT-III

5. a) Write Short notes on: List class, Vector class and HashMap class. (3x3=9)
   b) What are the uses of the PrintStream and PrintWriter class? (4)
   c) When does java.io.FileNotFoundException comes? How do you fix that? (3)
   d) Write down the differences between *byte stream* and *character stream*. (4)

6. a) What are transient and volatile modifiers? Illustrate the uses of BufferedInputSream class. (2+4=6)
   b) What are sockets? How are sockets represented in the Java programming language? What are the key steps in reading/writing to sockets? (1+2+2=5)
   c) Write few lines of code for creating a client server application to find a factorial of a number in which client will send a number greater than 0 and less than 20 to the server and server provides the factorial of a number to the client. (4)
   d) Differentiate between server socket and datagram socket. Discuss connectionless client/server interaction with Datagrams. (2+3=5)

UNIT-IV

7. a) What are the functions performed by servlets? Discuss the life cycle of a servlet. (2+4=6)
   b) What are the JDBC statements? How do Java applications access the database using JDBC? (2+3=5)
   c) What are Java Beans? Discuss its features. (1+3=4)

8. a) What is an event in Swing? How are they handled? Explain with an example. (2+3=5)
   b) What are layout managers? What is an Adapter Class? Discuss window adapter with an example. (2+1+3=6)
   c) Briefly describe the significance of Graphics class in Java. What are the different ways of drawing a polygon in applet? (2+2=4)