Second Semester MCA Degree Examination, Jan./Feb. 2023
Object Oriented Programming with Java

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a.   What is Typecasting? Explain different types of typecasting in java with suitable example. **(05 Marks)**

    b.   Explain the following with example:
         i) % =   ii) >>   iii) Find the type of the roots of the quadratic equation for the discriminent value using ternary operator   iv) Bitwise complement operator (~).   **(09 Marks)**

    c.   Explain the scope and lifetime of variables in java.   **(06 Marks)**

OR

2   a.   How arrays are initialized and defined in java explain with example? Write a java program to find the maximum and minimum element among array = {7, -8, 36, 105, 15, 18, -1} using for each loop.   **(10 Marks)**

    b.   Explain the following: i) charAt( )   ii) getBytes( )   iii) compareTo( )   iv) regionMatches( )   v) lastIndexof( )   **(10 Marks)**

Module-2

3   a.   Explain about static variable, static method and static block with suitable example. **(06 Marks)**

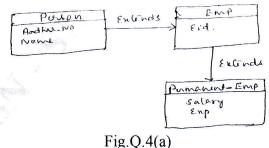   b.   What is varargs? Specify the restrictions on varargs. Explain varargs with an example. **(06 Marks)**

    c.   Create a class called distance where distance is expressed in terms of mts and cms. Write constructors to initialize the distance object. Overload a method add such that
distance add (distance int) // Add int value and object
distance add (distance distance) // Add two objects
Test the same on creating the objects.   **(08 Marks)**

OR

4   a.   What is inheritance? What is the advantages of inheritance, write a java program to explain the execution of the constructor when an object of permanent Employee is created for the following hierarchy.   **(10 Marks)**

Fig.Q.4(a)

    b.   What is method overriding? Explain how overriding methods supports polymorphism create a class called Vehicle and a class Car which extends vehicle. Illustrate overriding using the relationship between the classes.   **(10 Marks)**

Module-3

5 a. What is an interface? With an example explain how multiple inheritance is implemented in java. **(05 Marks)**

   b. Design an interface called polygon with a method called area. Implement this interface to create different classes like square, rectangle and print the area of square and rectangle. **(08 Marks)**

   c. What is a package? Write a simple program to create a package and import package to make use of the class declared in the package. **(07 Marks)**

OR

6 a. Define exception and explain the general structure of exception handling mechanism. Write a simple program to generate arithmetic exception and print the description of exception through the program. **(10 Marks)**

   b. How to create user defined exception in java explain with an example? **(06 Marks)**

   c. Differentiate between throw and throws. **(04 Marks)**

Module-4

7 a. Define a thread. Explain the two methods of creating threads. Write a java program to create multiple threads by implementing runnable interface. **(10 Marks)**

   b. Write a java program to demonstrate producer consumer problem using synchronized threads. **(10 Marks)**

OR

8 a. What is enumeration? Explain values( ) and valueOf( ) methods. **(10 Marks)**

   b. What is autoboxing and autounboxing in arithmetic expressions? Explain with an example. **(10 Marks)**

Module-5

9 a. Explain about URL connection class. Give suitable example for the same. **(10 Marks)**

   b. What is TCP/IP client socket? Explain the two constructs used to create client socket. **(10 Marks)**

OR

10 a. Explain linked list collection class in java with any 4 methods associated with it and write the java program to demonstrate adding a user defined class into linked list collection class. **(12 Marks)**

   b. Explain Map interface with an example. **(08 Marks)**

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