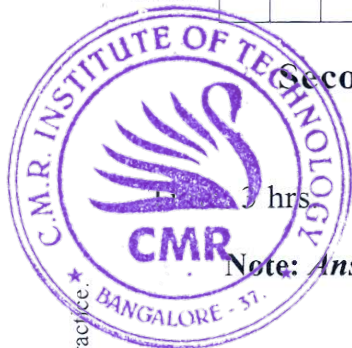


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Second Semester MCA Degree Examination, Jan./Feb. 2023 Object Oriented Programming with Java

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 discriminant 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 are 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)

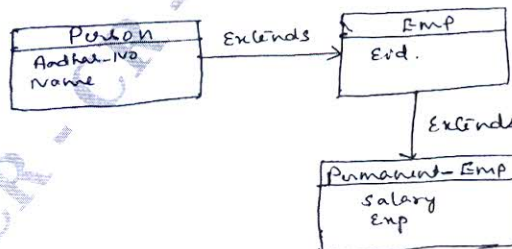


Fig.Q.4(a)

- 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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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)
