

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2024)

CLASS: I.MSc.
BRANCH: MATHS & COMP.

SEMESTER : IV
SESSION : SP/2024

SUBJECT: CS204 OBJECT ORIENTED PROGRAMMING AND DESIGN PATTERN
TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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- Q.1(a) Explain Why do we make the main method in java as follows: [2]
public static void main(String args[])
- Q.1(b) Discuss the difference between JVM, JRE and JDK. Why is java known as platform independent? [3]
- Q.2(a) What do you understand by class, object, and method? Give one example of each. [2]
- Q.2(b) Consider a class named 'Test' having one method that accepts two arguments; one is array, and another is one numeric value 'i'. The array and the numeric value are entered by the user. The array A is of n integers and 'i' is a multiplication of two integers belongs to A. For example, if the values of A are 8 6 3 4 5 9 2 and 'i' is 40, indices of two numbers such that their result is 40 are index 0 and index 4. You need to display the index values of the array. Write a program in java to create object of the class that calls the method and display the result. Can we implement the above scenario using variable length argument? [3]
- Q.3(a) What do you understand by method overloading? Is it possible to overload constructor, static method, and final method? If yes, then how and if not then justify your answer. [2]
- Q.3(b) Consider a class named 'Combined' that consists of two methods named 'combineData()'. One method takes two strings as an argument and returns the concatenated string. Another method takes two integers as an argument and returns the summation of the two arguments. Create the object of the class 'Combined' to call both the methods with suitable arguments provided by user in the main() method and display the result for the same. [3]
- Q.4(a) What is the difference between typecasting and type-conversion? Explain with a suitable example. [2]
- Q.4(b) What do you understand by constructors. Describe the types of constructors? What is the behavior of constructor with keyword static and final is constructor? [3]
- Q.5(a) Explain three usages of 'this' keyword with example? Can we use 'this' with static method? If yes then give example, if no then justify your answer. [2]
- Q.5(b) Create a class named 'Box' that has three data members named height, width, and depth. The class consists of three constructors; one is default constructor; another is parameterized constructor that initializes the data members of the class using 'this' keyword. Third constructor is copy constructor and performs the task of initialization. In the main() method create the suitable object to call all the three constructors. Also explain the concept of shallow copy and deep copy using suitable object and constructor in the main() method. [3]

:::21/02/2024 M:::