

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION MO/2022)

CLASS: B.Tech  
BRANCH: CS / IT

SEMESTER : III  
SESSION : MO/2022

SUBJECT: CS233 OBJECT ORIENTED PROGRAMMING & DESIGN PATTERN  
TIME: 03 Hours  
FULL MARKS: 50

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 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

		CO	BL
Q.1(a)	What is the difference between Integer and int? Illustrate with examples.	[2]	1 4
Q.1(b)	Differentiate between primitive and reference types of variable. How object of a class is initialized? Illustrate with an example	[3]	1 4
Q.1(c)	Create a class called <i>MyTime</i> that includes three instance variables— <i>hours</i> (type int), <i>min</i> (type int) and <i>sec</i> (type int). Provide a constructor that initializes the three instance variables and assumes that the values provided are correct. Provide a <i>set</i> and a <i>get</i> method for each instance variable. Provide a method <i>displayTime</i> that displays the hours, minutes and seconds separated by : .	[5]	3 6
Q.2(a)	Compare and contrast the <i>break</i> and <i>continue</i> statements.	[2]	2 4
Q.2(b)	What is static method? Specify its benefits. Write a program containing a static method maximum to compute maximum of three values.	[3]	3 2
Q.2(c)	Specify the characteristics of method overloading. Write a program to demonstrate it with passing arrays to methods	[5]	2 3
Q.3(a)	What happens when a subclass redefines a superclass method by using the same signature?	[2]	1 1
Q.3(b)	Discuss the different access specifiers in JAVA. What are the relative merits of using protected access vs. using private access in superclasses.	[3]	2 3
Q.3(c)	Differentiate between class and interface. Write a program that implements an interface 'Area' to compute the area of a rectangle and circle	[5]	3 4
Q.4(a)	Differentiate between Exception class and Error class.	[2]	1 4
Q.4(b)	Write a program demonstrating that the order of catch blocks is important.	[3]	3 5
Q.4(c)	Write and explain a GUI-based program to compute and display the sum of marks in three subjects using <i>JOptionPane</i> class.	[5]	4 2
OR			
Write a GUI based program to display three buttons marked RED, BLUE and RESET. When the user clicks on the buttons, the background color changes to Red, Blue and White respectively.			
Q.5(a)	Explain the use of File class and three methods of the class.	[2]	5 2
Q.5(b)	How reading and writing of characters in input and output files are performed using file stream classes? Explain with a suitable example.	[3]	5 3
Q.5(c)	What is Regular Expression? Specify the use of character classes and quantifiers in its design. How it can be used to validate input data such as your first name, zip code, and mobile number? Explain.	[5]	3 5

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