BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2023)

CLASS: BTECH   SEMESTER : III
BRANCH: CSE / AIML   SESSION : MO/2023

SUBJECT: CS233 OBJECT ORIENTED PROGRAMMING & 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**

			CO	BL
Q.1(a)	Java is platform independent, portable and robust. Justify your answer.	[2]	1	1
Q.1(b)	Explain the purpose of using different keywords in the statement "public static void main(String args[ ])".Can we use main() method without static keyword? Justify your answer.	[3]	1	2

Q.2(a)   What is the output of the following JAVA program?   [2]   2   3

```java
class Demo {
        public static void main(String[] args)
          {
            int a = -5;
              int b = 8;
              for (int i = 0; i < 8; i++)
                {
                   if((++a > 2) || (b-- > 2))
                     {
                        a++;
                     }
                }
            System.out.println("a="+ a + " " + "b="+b);
          }
        }
```

			CO	BL
Q.2(b)	State the advantages of wrapper classes over primitive data types. Explain boxing and unboxing by means of an example each.	[3]	1	1
Q.3(a)	String objects are Immutable. Explain.	[2]	1	2
Q.3(b)	Write a program in Java to read a sentence and a character from the user. All the words that begin with the input character are omitted from the sentence and the starting letter of all the other words are capitalized and prefixed with @ . (Eg: Input sentence: "I am eating ice-cream in Italy" Input character: 'i' Output: @Am @Eating (all words starting with the character 'I' or 'i' is omitted from the output and the remaining words are prefixed by '@' and begin with a capital letter.)	[3]	2	3
Q.4(a)	What is a constructor? Illustrate different types of constructors with suitable program segments.	[2]	1	3
Q.4(b)	Differentiate between primitive and reference types of variable. How object of a class is initialized? Illustrate with an example	[3]	1	4
Q.5(a)	Differentiate between Array and ArrayList with examples.	[2]	2	4
Q.5(b)	Write a program in java which reads 'n' numbers and computes the sum of all the successors of every odd number that occur among the given n numbers. Successor of a number is the number that occurs after that number in the array. For example, if n=7 and the given numbers are 17, 11, 24, 13, 7, 8, 14 then answer is (11+24+7+8)=50.	[3]	2	3

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