NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech.

SEM: III - THEORY EXAMINATION (2021 - 2022)

Subject: Object Oriented Techniques using Java

Time: 03:00 Hours

Max. Marks: 100

General Instructions:

1. All questions are compulsory. It comprises of three Sections A, B and C.

- Section A - Question No- 1 is objective type question carrying 1 mark each & Question No- 2 is very short type questions carrying 2 marks each.
- Section B - Question No- 3 is Long answer type - I questions carrying 6 marks each.
- Section C - Question No- 4 to 8 are Long answer type - II questions carrying 10 marks each.
- No sheet should be left blank. Any written material after a Blank sheet will not be evaluated/checked.

SECTION A

20

1. Attempt all parts:-

1-a.   In JAVA main method returns value of type _____ [CO1]   1

1. float

2. int

3. void

4. String

1-b.   What is bytecode in Java? [CO1]   1

1. Code generated by a Java compiler

2. Code generated by a Java Virtual Machine

3. Name of Java source code file

4. Block of code written inside a class

1-c.   If same message is passed to objects of several different classes and all of those can   1
respond in a different way, what is this feature called? [CO2]

1. Inheritance

2. Overloading

3. Polymorphism

4. Overriding

1-d.   Java _____ is invoked at the time of object creation. [CO2]   1

1. constructor

2. class

3. method

4. array

1-e.   Which of these keywords must be used to monitor for exceptions? [CO3]   1

        1. try

        2. catch

        3. throw

        4. finally

1-f.   An _____ statement can be used to access the classes and interface of a   1
different package from the current package. [CO3]

        1. instanceOf

        2. import

        3. extends

        4. implement

1-g.   The keyword that is used to protect the methods from simultaneous access in   1
Threads is _____ [CO4]

        1. save

        2. synchronized

        3. Both

        4. This task is not possible in threads

1-h.   Which of these classes are used by Byte streams for input and output operation?   1
[CO4]

        1. Input Stream

        2. inputOutputStream

        3. Reader

        4. All of the mentioned

1-i.   A _____ dictates the style of arranging the components in a container. [CO5]   1

        1. border layout

        2. grid layout

        3. panel

        4. layout manager

1-j.   _____ interface provides the capability to store objects using a key-value pair.   1
[CO5]

        1. Java.util.Map

        2. Java.util.Set

        3. Java.util.List

        4. Java.util.Collection

2. Attempt all parts:-

2-a.   What is JVM? [CO1]   2

2-b.   What is the use of final keyword in JAVA? [CO2]   2

2-c.   What is an assertion in Java? How is it different from if - else conditions? [CO3]   2

2-d.   Describe any two Annotations from the Java Standard Library. [CO4]   2

2-e.   What Are Wrapper Classes? Why do we need wrapper classes in JAVA? [CO5]   2

SECTION B   30

3. Answer any five of the following:-

3-a.   What is the difference between object diagrams and class diagrams? Draw a class   6
diagram of order management system. [CO1]

3-b.   How to take an input from a user with the help of scanner class in JAVA? Explain   6
using JAVA code. [CO1]

3-c.   Explain Abstract class concept with an example program. [CO2]   6

3-d.   Compare overloading and overriding of methods in java using proper examples.   6
[CO2]

3-e.   Write a method to check if input string is Palindrome? [CO3]   6

3-f.   Explain the concept of multithreading in java and explain how even and odd numbers   6
can be printed by using multithreading concept. (CO4)

3-g.   Examine ArrayList with Example. [CO5]   6

SECTION C   50

4. Answer any one of the following:-

4-a.   What are command line arguments? How are they useful? Write a program to   10
compute the sum of the digits of an input number (Using command line arguments)
eg if 4523 is an integer then the sum of digits displayed will be 14. [CO1]

4-b.   Write a JAVA program that takes values of name, age, department and marks of 4   10
subjects from the user. Display the name, total and average of marks computed.
[CO1]

5. Answer any one of the following:-

5   Explain the following with respect to JAVA: [CO2]   10
a) super keyword
b) Garbage collection
c) Interface
d) Static data members
e) final keyword

5   What is the lambda expression in Java and what are the features of a lambda   10
expression? Briefly explain its use with the help of suitable example. [CO2]

6. Answer any one of the following:-

6   Write the differences between String, StringBuffer and StringBuilder classes. With   10
proper syntax, explain the following methods. [CO3]

    1. Method to extract a particular character of a string.
    2. Reverse a String.

6   What is the difference between an error and exception? Write the following Java   1
program for illustrating the use of throw keyword. Write a class ThrowExample
contains a method checkEligibilty(int age, int weight) which throw an

2-d.   Describe any two Annotations from the Java Standard Library. [CO4]   2

2-e.   What Are Wrapper Classes? Why do we need wrapper classes in JAVA? [CO5]   2

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3-d.   Compare overloading and overriding of methods in java using proper examples.   6
         [CO2]

3-e.   Write a method to check if input string is Palindrome? [CO3]   6

3-f.   Explain the concept of multithreading in java and explain how even and odd numbers 6
         can be printed by using multithreading concept. (CO4)

3-g.   Examine ArrayList with Example. [CO5]   6

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         eg if 4523 is an integer then the sum of digits displayed will be 14. [CO1]

4-b.   Write a JAVA program that takes values of name, age, department and marks of 4   10
         subjects from the user. Display the name, total and average of marks computed.
         [CO1]

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| 2-d. | Describe any two Annotations from the Java Standard Library. [CO4] | 2 |
| 2-e. | What Are Wrapper Classes? Why do we need wrapper classes in JAVA? [CO5] | 2 |

SECTION B
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3. Answer any _five_ of the following:-

3-a.	What is the difference between object diagrams and class diagrams? Draw a class diagram of order management system. [CO1]	6
3-b.	How to take an input from a user with the help of scanner class in JAVA? Explain using JAVA code. [CO1]	6
3-c.	Explain Abstract class concept with an example program. [CO2]	6
3-d.	Compare overloading and overriding of methods in java using proper examples. [CO2]	6
3-e.	Write a method to check if input string is Palindrome? [CO3]	6
3-f.	Explain the concept of multithreading in java and explain how even and odd numbers can be printed by using multithreading concept. (CO4)	6
3-g.	Examine ArrayList with Example. [CO5]	6

SECTION C
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4. Answer any _one_ of the following:-

| 4-a. | What are command line arguments? How are they useful? Write a program to compute the sum of the digits of an input number (Using command line arguments) eg if 4523 is an integer then the sum of digits displayed will be 14. [CO1] | 10 |
| 4-b. | Write a JAVA program that takes values of name, age, department and marks of 4 subjects from the user. Display the name, total and average of marks computed. [CO1] | 10 |

5. Answer any _one_ of the following:-

| 5 | Explain the following with respect to JAVA: [CO2]
a) super keyword
b) Garbage collection
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e) final keyword | 10 |
| 5 | What is the lambda expression in Java and what are the features of a lambda expression? Briefly explain its use with the help of suitable example. [CO2] | 10 |

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1. Method to extract a particular character of a string.
2. Reverse a String. | 10 |
| 6 | What is the difference between an error and exception? Write the following Java program for illustrating the use of throw keyword. Write a class ThrowExample contains a method checkEligibilty(int age, int weight) which throw an | 10 |

(2)

ArithmeticException with a message "Student is not eligible for registration" when age < 12 and weight < 40, otherwise it prints "Student Entry is Valid!!". [CO3]

7. Answer any one of the following :-

| 7-a. | What is the difference between thread and a process? Explain the concept of Inter Thread Communication and describe the role of wait(), notify(), and notifyAll() methods in inter thread communication. [CO4] | 10 |
| 7-b. | While reading a file, how would you check whether you have reached to the end of file? Write a JAVA program to copy the content of "file1.txt" to "file2.txt". [CO4] | 10 |

8. Answer any one of the following :-

| 8-a. | Discuss some general rules for using layout managers. Describe the various layout managers available in AWT. [CO5] | 10 |
| 8-b. | Differentiate between List and ArrayList. Create a class TestArrayList having main method. Perform following functionality. [CO5] | 10 |

1. Create an ArrayList having fruits name of type String.
2. Store different fruit names. (Try to add duplicate fruit names).
3. Print all fruit names.
4. Print the first and last fruit names.
5. Print the size of ArrayList.
6. Remove a particular fruit from ArrayList.