PAPER ID-411286

Roll No: 2 2 0 0 5 4 1 5 3 0 0 4 6

BTECH
(SEM IV) THEORY EXAMINATION 2023-24
OBJECT ORIENTED PROGRAMMING WITH JAVA

TIME: 3 HRS **M.MARKS: 70**

6. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Describe Linked List in Java collection framework. With suitable example describe any five methods available in Linked Lists.
(b)	Describe HashMap in Java collection framework. With suitable example describe any five methods available in HashMaps.

7. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Describe following 1. Spring container 2. Spring bean life cycle
(b)	Describe following 3. Spring boot framework and its benefits 4. RESTFUL API with Spring boot

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Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	Describe JVM and byte code in Java Architecture.
b.	Define the concept of classes and object in Java with a suitable example.
c.	Explain Interfaces in Java with suitable example.
d.	Describe all the keywords used for exception handling in Java.
e.	Describe various states achieved by the thread in its life cycle.
f.	Write a Java program to create an ArrayList<String> with five items and display all the elements using forEach method.
g.	Explain the concept of Sealed classes in Java with suitable example.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	Explain abstraction and abstract classes in Java. Describe abstract method. With a suitable example demonstrate the application of abstract classes.
b.	Describe the ways to create the threads in Java with suitable code. Also explain which method is more suitable to create threads.
c.	Explain the functional interfaces in Java. Describe lambda expressions with the help of functional interfaces.
d.	Describe Collections framework in Java with a suitable diagram displaying interfaces and classes and their hierarchy. Also explain the List, Set and Queue interfaces.
e.	Explain the difference between Dependency Injection (DI) and Inversion of Control (IoC) in Spring.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Illustrate polymorphism and its types in Java. Differentiate between run-time and compile-time polymorphism. Write super class Shape with method displayArea() and sub class Rectangle. Demonstrate method overriding with this example.
(b)	Illustrate Constructors and their applications in Java. Describe the types of constructors used in Java. Write a class with name Student with attributes roll_number, name, branch and email. Write all argument constructor for class Student and create two objects with this constructor.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Differentiate between checked and unchecked exceptions in Java. Write a Java program to demonstrate Arithmetic Exception handlings.
(b)	Differentiate between with suitable examples: 1. Character streams and Byte Streams 2. wait() and notify()

5. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Explain Java stream API and its applications. Describe Intermediate and terminal operations with suitable example. Write a program to print sum of all even numbers form an ArrayList<Integer> containing all integers from 1 to 10.
(b)	Compare and contrast switch-case statement with switch-expression in Java. Explain with suitable example.

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