UPES
End Semester Examination, December 2023

Course: Object Oriented Programming   Semester: III
Program:B Tech CSE(H+NH) All Spec   Time: 03 hrs.
Course Code:CSEG2020/2016   Max. Marks: 100

SECTION A

S. No.		Marks	CO
Q 1	Examine the concept of the 'abstract' keyword in Java, outlining its purpose and usage in the context of object-oriented programming.	**4**	**CO1**
Q 2	Evaluate the benefits derived from the immutability of the 'String' class in Java, as well as define its impact on increasing security within Java applications.	**4**	**CO2**
Q 3	Justify the statement through the Java program "ArrayList allows duplicate values while HashSet does not allow duplicate values."	**4**	**CO4**
Q 4	Design a Java program that calculates the sum of all elements in an array of integers. Make sure that the program can handle arrays of different sizes and that it accurately calculates the sum of all elements.	**4**	**CO1**
Q 5	Explain the concept of constructor overloading in Java through a code example.	**4**	**CO1**

SECTION B

Q6	Outline the process of establishing a JDBC connection to extract data from the database. Develop a Java program that connects to the database and retrieves data from the 'Emp' table in the 'Employee' database, which includes columns such as 'emp_id,' 'emp_name,' and 'salary'. Utilize the Statement interface to execute the SQL query within the Java program.	**10**	**CO4**
Q7	Analyze the logic behind the exclusion of multiple inheritance by Java. Demonstrate with the help of a Java example how we can implement multiple inheritance in java.	**10**	**CO3**
Q8	State the purpose of the following methods using a Java program: a) run() b) start() c) join() d) sleep()	**10**	**CO4**
Q9	Define the concept of a package in the Java programming language. Additionally, demonstrates the process of importing one package into another through a sample program. OR	**10**	**CO2**

	Create a Java program that demonstrates multilevel inheritance. Begin by establishing a base class called Employee with common attributes such as name, age, and employeeID. Next, create a class Manager that extends the Employee class, adding specific attributes like department and salary. Finally, develop a class Director that extends the Manager class, introducing attributes like numberOfReports and stockOptions.		
SECTION-C			

Q 10	Explain the following in detail:
	   a) Get and Post Method
	   b) JSP Life Cycle
	   c) Deployment Descriptor
	   d) Session Management
	
	            OR
	Develop a Java servlet application that allows users to register on a website. Create a registration page that prompts users to enter their desired username, email address, and password. Upon submission, the servlet should verify the validity of the information provided and either create a new user account or display an error message with relevant instructions on how to fix the problem.
		20	**CO5**

Q11	Develop a Java program that facilitates user authentication through a 4-digit PIN system. The program should adhere to the following guidelines: a) Define a constant variable to hold the correct 4-digit PIN (e.g., 1234). b) Utilize a loop structure to continuously prompt the user to enter the PIN. c) If the user enters the correct PIN, display the message "Access granted! User information displayed." d) If the user inputs an incorrect PIN, keep track of the number of failed attempts. If the user exceeds 3 incorrect attempts, the program should throw a custom exception named MaxAttemptsExceededException, accompanied by the error message "Maximum attempts exceeded." e) Implement a try-catch block to handle the MaxAttemptsExceededException and present the corresponding error message.	**20**	**CO3**