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Question Paper Code: U6E03

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Sixth Semester

Artificial Intelligence and Data Science

21UAD603- THINKING IN JAVA

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

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| 1. List some of the keywords in Java. | CO1-U |
| 2. Write a Java program to print first n natural numbers. | CO2-App |
| 3. What are the important features of Object oriented Programming. | CO1-U |
| 4. Write a java program to explain the function of “this operator”? | CO2-App |
| 5. Why do we need super constructors? | CO1-U |
| 6. Write a program to overload a method sum. | CO2-App |
| 7. What are the advantages of using packages? | CO1-U |
| 8. Write a java program for try and catch block implementation. | CO2-App |
| 9. Why strings are used in java? | CO1-U |
| 10. Write a Java program that concatenates two strings. | CO2-App |

PART – B (5 x 16= 80 Marks)

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|---|---------|------|
| 11. (a) (i) Write a java program to generate Fibonacci series. (8m) | CO2-App | (16) |
| (ii) Write a java program for matrix multiplication. (8m) | | |
| Or | | |
| (b) (i) Implement a Java program to find the sum of the first 100 natural numbers using a while loop. (6m) | CO2-App | (16) |
| (ii) Discuss the differences between for loop and the while loop in Java. Provide scenarios where one loop is more suitable than the other. (10m) | | |

12. (a) Explain the concept of OOPS and how it promotes code reusability in JAVA. CO1-U (16)
- Or
- (b) Define the working of abstraction and encapsulation with suitable example programs. CO1-U (16)
13. (a) Write a Java program that demonstrates inheritance by creating a superclass Vehicle and subclass Car. Implement relevant methods and attributes to showcase inheritance. CO2-App (16)
- Or
- (b) Write a Java program that demonstrates polymorphism by implementing a shape hierarchy with classes Shape, Circle, and Rectangle, showcasing method overriding and dynamic method invocation. CO2-App (16)
14. (a) Explain the purpose and functionality of the Collection interface in Java. Discuss its hierarchy and key methods. Illustrate scenarios where the Collection interface is used in Java programs. CO1-U (16)
- Or
- (b) Discuss the import statement in Java, which is used to access classes and interfaces from other packages. Explain the different forms of import statements and their implications. CO1-U (16)
15. (a) Explain the various constructors available in the String class in Java, including parameterized constructors and conversions from other data types. Discuss the differences between String objects created using different constructors. CO1-U (16)
- Or
- (b) Define Character extraction and String Comparison with syntax and example program. CO1-U (16)