Reg. No. : | | | | | | | | | | | | |

**Question Paper Code: U9C04**

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

Professional Elective

Computer Science and Business Systems

21CBV704 - PROGRAMMING 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. | Define JVM? | CO1-U |
| 2. | Write a Java Program Add Two numbers using Constructor. | CO1-U |
| 3. | What are the different access specifiers available in Java? | CO1-U |
| 4. | Distinguish between finally and finalize method in java. | CO1-U |
| 5. | What is the need for an interface? | CO1-U |
| 6. | If a class is located in a package, what do you need to change in the OS environment to be able to use it? | CO1-U |
| 7. | What is runtime exception in java? | CO1-U |
| 8. | Define Serialization and give its advantages. | CO1-U |
| 9. | What is the difference between a Choice and a List? | CO1-U |
| 10. | Create a simple AWT program to display “Programming in Java”. | CO1-U |

PART – B (5 x 16= 80 Marks)

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| 11. | (a) | (i) Write a Java program to calculate the frequency of characters in a string .First we have to find out unique characters from the string as calculating frequency means how many times each character is present in the string.<br>Input :Hello<br>Output:H-1,e-1,l-2,o-1 | CO2-App | (8) |

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| | | (ii) Write a program to print the area of a rectangle by creating a class named 'Area 'taking the values of its length and breadth as parameters of its constructor which returns the area of the rectangle. Length and breadth of rectangle are entered through key board. | CO2-App | (8) |
| | | Or | | |
| | (b) | (i) Write a program to find the number of vowels, consonants ,digits and white space characters in a string. | CO2-App | (8) |
| | | (ii) Create a class named 'Rectangle 'with two data members length and breadth and a method to calculate the area which is 'length*breadth'. The class has two constructors which are:<br>A) Having no parameter - values of both length and breadth are assigned zero.<br>B) Having two numbers as parameters - the two numbers are assigned as length and breadth respectively.<br>Now, create objects of the 'Rectangle' class having none and two parameters and print their areas. | CO2-App | (8) |
| 12. | (a) | (i) Create a class called Calculation with methods for addition and subtraction. Create another class My_Calculation with a method for multiplication. The My_Calculation class must inherit Calculation class so that objects of My_Calculation class can do addition, subtraction, and multiplication operations.. | CO2-App | (8) |
| | | (ii) Creates a class hierarchy for employees of a company. The base class should be Employee, with subclasses Manager, Developer, and Programmer. Each subclass should have properties such as name, address, salary, and job title. Implement methods for calculating bonuses, generating performance reports, and managing projects. | CO2-App | (8) |
| | | Or | | |
| | (b) | (i) Create an abstract class 'Animals' with two abstract methods 'cats' and 'dogs'. Now create a class 'Cats' with a method 'cats' which prints "Cats meow" and a class 'Dogs' with a method 'dogs' which prints "Dogs bark", both inheriting the class 'Animals'. Now create an object for each of the subclasses and call their respective methods. | CO2-App | (8) |
| | | (ii) Create an abstract class 'Parent' with a method 'message'. It has two subclasses each having a method with the same name 'message' that prints "This is first subclass" and "This is second subclass" respectively. Call the methods 'message' by creating an object for each subclass | CO2-App | (8) |

13. (a) Explain the concept of interfaces in Java with suitable examples and mention the purpose and usage of interfaces. CO1-U (16)

Or

(b) What is a package in Java? How to create a package in Java? How to import and use classes from external packages. CO1-U (16)

14. (a) Creates three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number. CO2-App (16)

Or

(b) Develop a BankDemo application in which user can withdraw and deposit amount. If the user withdraws more than the balance, the user should be given a warning of insufficient funds to withdraw. CO2-App (16)

15. (a) Describe any three layout managers in Java with examples. CO1-U (16)

Or

(b) Explain about the following User Interface components of AWT: CO1-U (16)

(i) Labels
(ii) Button
(iii) Check box
(iv) List Box