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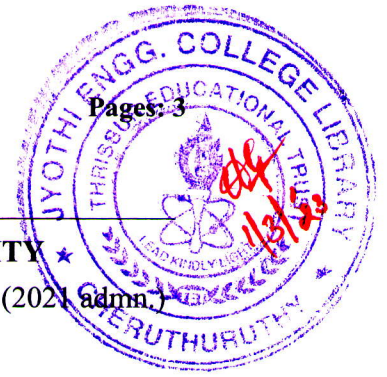
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Reg No.: \_\_\_\_\_

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**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Third Semester B.Tech (Minor) Degree Examination December 2022 (2021 admn)



**Course Code: CST281**

**Course Name: OBJECT ORIENTED PROGRAMMING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions. Each question carries 3 marks*

Marks

- 1 Illustrate the concepts of classes and objects in Java language. (3)
- 2 What are the advantages of using UML? Sketch the UML class diagram for an entity 'book' with attributes 'book\_no' and 'book\_name' and operations 'buy' and 'sell'. (3)
- 3 What are parameterized constructors? Give an example. Is it possible to define a parameterized constructor for a class without defining a parameter-less constructor? (3)
- 4 Illustrate variable length arguments in Java. (3)
- 5 Illustrate how a class in Java can be prevented from getting inherited? (3)
- 6 Does Java support multiple inheritance? Justify your answer. (3)
- 7 Outline the significance of String class in Java and list any of its six built in functions. (3)
- 8 Write two subclasses for the 'InputStream' and 'OutputStream' classes in Java and specify their uses. (3)
- 9 Draw the lifecycle of a thread showing the different states and methods invoked. (3)
- 10 Compare any three types of Swing Button classes. (3)

**PART B**

*Answer any one question completely from each module. Each question carries 14 marks*

**Module 1**

- 11 a) What are the unique advantages of object-oriented programming paradigm? (8)
- b) Construct a Use Case Diagram for an online music playing system. (6)
- 12 a) Illustrate the Java Programming and Runtime Environment. Explain the roles of each component of it while compiling and executing a java program. (10)

- b) Bring out the difference between function-oriented software design approach and object-oriented software design approach. (4)

**Module 2**

- 13 a) Show the use of different types of shift operators and logical operators in java with the help of suitable examples. (7)
- b) Draw a table showing the visibility of all access specifiers available in java language with respect to; same class, same package sub-class, same package non-sub-class, different package sub-class, different package non-sub-class. (7)
- 14 a) Describe the following statements in Java. (6)
- i) *switch* ii) *for* iii) *break* and iv) *continue*
- b) Write a Java program with a class 'Complex' to represent complex numbers. Model the class in such a way that it uses constructor overloading aspects to initialize its instances. Support the design with code to demonstrate its working. (8)

**Module 3**

- 15 a) What is exception? List any four exception classes in Java. Explain various exception handling keywords in Java, with examples. (9)
- b) Explain how inheritance is implemented in Java. What is the use of 'super' keyword? Illustrate its usage with suitable examples. (5)
- 16 a) Write a java program to show the significance of method overriding in achieving run time polymorphism. Discuss the difference between method overriding and method overloading. (10)
- b) How do you create and import a package in Java? (4)

**Module 4**

- 17 a) Describe the different character extraction methods of String class along with their syntax. (5)
- b) Write a Java program to create a new file named 'MyFile.txt' and write the statement "This is the University Exam for OOP. This a program to illustrate the use of files." into the file with each sentence in the statement representing a new line in the file. (9)
- 18 a) Write a Java program to count the occurrence of a particular word within a sentence using string handling methods. (10)
- b) Write a Java program to copy the contents of one file to another file using *FileInputStream* and *FileOutputStream* classes. (4)

**Module 5**

- 19 a) Discuss the two methods in which threads can be created in Java. (5)  
b) Discuss the event handling mechanism in Java using the Delegation Event Model. (9)
- 20 a) What is the use of Swing package in Java? Discuss any two features of it. (6)  
b) What is Thread Synchronization? With an example illustrate the working of any one technique used for Thread synchronization in Java. (8)