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Roll No. :

B033313(033)

**B. Tech. (Third Semester) Examination,
Nov.-Dec. 2021**

AICTE (New Scheme)

(Information Technology Branch)

**OBJECT ORIENTED CONCEPTS &
PROGRAMMING using JAVA**

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Each question part (a) is compulsory and from part (b), (c) and (d). Attempt any two questions. Part (a) carry 4 marks and part (b), (c) and (d) each one carries 8 marks.

Unit-I

1. (a) When does Java known an object is no longer needed? And what happens to an unneeded object's storage.

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- (b) What is JVM? Why is it needed? And also explain the internal architecture of JVM. 8
- (c) Explain the concepts of class, abstraction, encapsulation, data hiding, inheritance, polymorphism, messaging using an example. 8
- (d) Write a program that will read an unspecified number of integers and will determine how many positive, negative and sum values have been read and program ends when the input is 0. 8

Unit-II

2. (a) How to add class or interface to a package? 4
- (b) What does it mean that a method or class is abstract? Can we make an instance of an abstract class? Explain it with example. 8
- (c) Write a program that illustrates interface inheritance, Interface *P* is extended by *P1* and *P2*. Interface *P12* inherits from both *P1* and *P2*. Each interface declares one constant and one method. Class *Q* implements *P12*. Instantiate *Q* and invoke each of

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- its methods. Each method displays one of the constants. 8
- (d) How copy constructor differ than parameterized constructor discussed with suitable code. Create a Java Class "Shape" with constructor to initialize the one parameter "dimension". Now create three sub classes of shape with following methods : 8
- (i) "Circle" with methods to calculate the area and circumference of the circle with dimension as radius.
- (ii) "Square" with methods to calculate the area and length of diagonal of the square with dimension as length of one side.
- (iii) "Sphere" with methods to calculate the volume and surface area of the sphere with dimension as radius of the sphere.
- Write appropriate main method to create object of each class and test every method.

Unit-III

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3. (a) What is a StringBuffer class and how does it differs from string class? 4
- (b) Create try blocks that will generate three types of exception and also create necessary catch blocks to catch these exceptions and handle these. You should also use finally statement in your block. 8
- (c) What is Exception handling in java? Why it is used? Write a java code to simulate the way a stack mechanisms works with exception handling, throwing and dealing with exceptions such as stack is full (if you want to add more elements into the stack) or Stack is empty (you want to pop elements from the stack). 8
- (d) Write a program to illustrate the usage of the following methods of StringBuffer class. Explain the output in each case. Delete (), SetCharAt (), deleteCharAt (), append (), charAt (), getChars (). 8

Unit-IV

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4. (a) What is the difference between Byte Streaming and Character Streaming? 4
- (b) Write a program to create two threads, one thread will print odd numbers and second thread will print even numbers between 1 to 20 numbers. 8
- (c) What is synchronization and why is it important? Write suitable code for synchronized method implementation. 8
- (d) Write a code copy contents of one file into another file using read and write methods of BufferWriter class. 8
- Unit-V**
5. (a) How do applets differ from application program explain with example? 4
- (b) What is the relationship between an event-listener interface and an event adapter? What interface is extended by AWT event-listeners? 8
- (c) Write an applet that tracks the position of the mouse

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when it is dragged or moved. At the current mouse position, it displays message (x, y) showing current position of the mouse. The message should disappear as soon as the user releases the mouse. 8

(d) Write a Java program which accepts students name, id, and marks and display the highest score and the lowest score using JDBC connection. 8