Time: 2½ hrs.   **Marks:75**
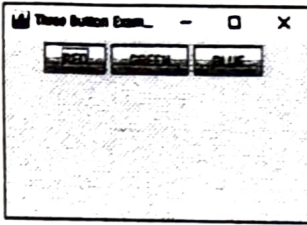
Note: 1. All questions are compulsory with internal choice.
              2. Draw neat diagrams wherever necessary.
              3. Figures to the right indicate full marks.

Q.1   **Answer the following (any three)**   (15)
   (a) Define constructor. Explain copy constructor with a suitable program.
   (b) List and explain any five features of Java.
   (c) What is method overloading?
   (d) What is meant by instance variable and static variable? Describe with examples.
   (e) Write a Java program to calculate the factorial of a number. [Take user input for number]
   (f) Write a Java program to find the perimeter of a rectangle.[Take user input for length and breadth]

Q.2   **Answer the following (any three)**   (15)
   (a) What is the significance of using 'super' when dealing with method overriding and inheritance?
   (b) Differentiate between an interface and a class.
   (c) Explain the significance of the 'abstract' keyword in Java when used with classes and methods.
   (d) Define inheritance. How many different types of inheritance are implemented in Java?
   (e) Write a Java program to create a class called Shape with a method called getArea(). Create a subclass called Rectangle that overrides the getArea() method to calculate the area of a rectangle.
   (f) Write a Java program to create an abstract class GeometricShape with abstract methods area() and perimeter(). Create subclasses Triangle and Square that extend the GeometricShape class and implement the respective methods to calculate the area and perimeter of each shape.

Q.3   **Answer the following (any three)**   (15)
   (a) What is a thread? Describe the entire life cycle of a thread.
   (b) Define a package and explain any four predefined packages in Java.
   (c) Explain exception handling:
       i.   try
       ii.   catch
       iii. throw
       iv.   finally

   (d) Explain the following thread-related methods:
       i.   suspend()
       ii.   resume()
   (e) Write a program to catch ArithmeticException of the following code.
              int answer = 5 / 0;
   (f) State and explain user defined exception.

Q.4   **Answer the following (any three)**   (15)
   (a) What is event delegation model?
   (b) Explain GridLayout with constructors and suitable example
   (c) Explain the difference between AWT and Swing.
   (d) Write a note on BorderLayout.
   (e) What are the key features of the Java Foundation Classes (JFC)?

(f) Write a GUI program to display the following using FlowLayout.

Q.5 **Answer the following (any three)** (15)
(a) Write a note on Type II JDBC Driver.
(b) Explain the significance of DriverManager and Connection classes in JDBC.
(c) What is a ResultSet in JDBC? Define any five methods of it.
(d) Explain how an object of PreparedStatement is created?
(e) Write a JDBC program to display records from a table.[Assume Table – Customer with cuit_id(int), cust_name(varchar), salary(double)]
(f) Write a JDBC program to drop a table named 'Student' from a database.

---X---