OBJECT ORIENTED PROGRAMMING
ONLINE TEST (OPEN BOOK) MARKING SCHEME

`CreateThread (23 M)`

1. **Instance Fields (6 M)**
   - **(i) Three JTextFields [0/1/2/3 M]**
   - **(ii) QuaratiEquation queue instance [0/1 M]**
   - **(iii) Two Label Instances (QueueFull & Total No of Equations) [0/1/2 M]**
2. **Constructor Method [6 M]**
   - **(i) Three JTextFields Parameters [0/1/2/3 M]**
   - **(ii) QuaraticEquationQueue Instance [0/1 M]**
   - **(iii) JLabel (Total Count) [0/1 M]**
   - **(iv) JLabel QueueFull [0/1 M]**
3. **Run() Method (11 M)**
   - **(i) while(true) condition [0/1 M]**
   - **(ii) Synchronized (this) Block [0/1 M]**
   - **(iii) Reading from Three JTextFields [0/1 M]**
   - **(iv) Validity of Input (a = = 0) [0/1 M]**
   - **(v) Creating Quadratic Queue Instance [0/1 M]**
   - **(vi) Adding into Queue [0/1 M]**
   - **(vii) Updating Total Count [0/1 M]**
   - **(viii) Changing color of QueueFull to green [0/2 M]**
4. **Suspend Method [0/1 M]**
5. **Resume Method [0/1 M]**

`ComputeThread (26 M)`

1. **Instance Fields [6 M]**
   - **(i) ThreadNo [0/1 M]**
   - **(ii) QuadraticEquationQueue [0/1 M]**
   - **(iii) JLabel (totalCountLabel) [0/1 M]**
   - **(iv) ThreadCountLabel [0/1 M]**
   - **(v) JLabel Array of Size 10 [0/1 M]**
   - **(vi) QueueEmpty Label [0/1 M]**
2. **Constructor [6 M]**
   - **(i) QuadraticEquationQueue [0/1 M]**
   - **(ii) JLabel Array of size 10 [0/1 M]**
   - **(iii) Thread No [0/1 M]**
   - **(iv) JLabel (Total Count) [0/1 M]**
   - **(v) JLabel (ThreadCouner) [0/1 M]**
   - **(vi) JLabel (QueueEmpty) [0/1 M]**
3. **Run() Method [14 M]**
   - **(i) While(true) Condition [0/1 M]**
   - **(ii) Synchronized (this) Block [0/1 M]**
   - **(iii) Remove() from QuadraticEquation Queue [0/1 M]**
   - **(iv) Setting Green Color of Empty Label [0/2 M]**
   - **(v) Checking whether Equation is Solved or not [0/1 M]**
   - **(vi) Computing Roots [compute()] [0/2 M]**
   - **(vii) Updating the Result Display Area [0/2 M]**
   - **(viii) Updating the Total Count JLabel [0/1 M]**
   - **(ix) Updating Thread Total Count JLabel [0/1 M]**
4. **Suspend() Method [0/1 M]**
5. **Resume() Method [0/1 M]**

Main() Method [31 M]

1. **ActionListener for Timer OR Random Thread Class [6 M]**
    - (i) **Generating Three Random Integers [0/1/2/3 M]**
    - (ii) **Updating the JTextField Values [0/1/2/3 M]**
2. **Creating Timer Instance OR Thread Instance and starting [0/2 M]**
3. **Creating Quardratic Queue Instance [0/1 M]**
4. **Creating CreateThread Instance [0/1 M]**
5. **Creating Three ComputeThread Instances [0/1/2/3 M]**
6. **Action Listener for b1 [6 M]**
    - (i) **Thread Not Started [Starting Thread + Timer] [0/1/2/3 M]**
    - (ii) **Thread Stopped [Resuming Thread + TimerRes] [0/1/2/3 M] (Half Weight without if Condition)**
7. **Action Listener for b2 [Suspending Thread + Timer Stop] [0/1/2/3 M]**
8. **ActionListener for b3 [6 M Same as b1]**
9. **ActionListner for b4 [0/1/2/3 M]**

Total Marks For Writing Code: 23 + 26 + 31 = 80 Marks

Executing The Code

Left Side Panel

1. **Displaying Random Numbers on Left Side Panel : 0/2 M**
2. **Updating QueueFull Label : 0/1 M**
3. **Updating Total Number of Equations Created : 0/1 M**

Right Side Panel

4. **Displaying of Results in ResultDisplayArea : 0/2 Marks**
5. **Updating Total Number of Equations Solved : 0/1 Mark**
6. **Updating Respective Thread Equation Counters : 0/2 M**
7. **Updating QueueEmpty : 0/1 M**

Total Marks For Code Execution: 10

Total Marks: 80 + 10 = 90 Marks