

**2022**  
**(July)**  
**M.C.A**  
**Paper Code: MCA-0818.1**  
**(Java Programming Lab)**

Full Marks: 40  
Time: 3 Hours

(The figures in the margin indicate full marks for the question)

**Attempt any two(2) questions**

1. Write a menu driven calculator program by using class, object, *this* keyword, and method overloading concepts to do the following operations: (20)
  - i. To add, subtract, divide, and multiply of two integers/float values.
  - ii. To calculate the square root of a number without using *sqrt()* method.
2. Create a class **Bicycle** with fields – *gear*, *speed* and *brand*. Provide three overloaded constructors - no-argument, three arguments and an object argument, to initialize the objects of the Bicycle class. Write appropriate accessor and mutator methods for each data members. Write methods: *speedup* (int), which takes an integer argument and increments the speed by this amount and method *–applybrake* (int) which also takes an integer argument and decrements the speed by that amount. Include a *toString* method to print the fields of the Bicycle. Create another class in **MountainBike** which inherits from Bicycle with additional field *seatHeight*. Define constructor, accessor and mutator methods for this class. Override the *toString* method in this class. Finally verify your classes using a **Test** class. (20)
3. Write a program to read all IP addresses present in a file. The name of the file is taken as an input from the user. Following are the validation criteria for IP address: (20)
  - i. It must start with a number “0-255”
  - ii. It must be followed by a dot (.)
  - iii. This pattern has to repeat for 4 times (eliminating the last dot)
4. Write a Java Swing program which will take a string and a character to be searched in that string (use JTextField component). Then print how many times that character has occurred in the input string. Use two radioButtons with options: On and Off, that will activate and deactivate a submit Button to perform the above task. Also, prompt one message which will display the remaining string. For example. (20)

*Input:* str = “I love my India”

Char = I

*Output:* No of times: 2; message: love my ndia.