**Section B1**

**Online on C++**

1. Define a class **Rational** with two private attributes numerator and denominator which represents a rational number of the form numerator/denominator in **the canonical form**. **[Marks: 2]**
2. Write down two constructors for **Rational** class one of which takes nothing as parameter and initializes both the numerator and denominator to 1, and another one takes two parameters and initializes the values accordingly. Note that you have to save the number in canonical form i.e, the numerator and denominator have no common divisor. **[Marks: 5]**

1. Define a member function **void** *print*() that will print the **Rational** number in the form numerator/denominator such as x/y. **[Marks: 2]**
2. Define a member function **Rational** *add*(**Rational** a) that will return another Rational number that is the sum of the rational number ‘a’ and the caller rational number. **[Marks: 5]**
3. Define a member function **int** *compare* (**Rational** a) that will compare a rational number ‘a’ with the caller rational number and return values 1, -1 and 0 if ‘a’ is less than, greater than and equal to the caller number, respectively. **[Marks: 3]**
4. Write any other helper function that is necessary to implement the above functions.
5. Write a main() function to demonstrate the functionality implemented in questions 1-5. **[Marks: 3]**
6. **(Bonus)** Write a function (not necessarily a member) **void** *sort*(**Rational** a[]) that will take an array of rational numbers ‘**a’** and print the numbers in sorted order. Update the main function to demonstrate the functionality.