

**Total Marks:** 50

**Due Date and Time:** February 12, 2021 6 pm. **No late submission will be permitted.**

**Submission Procedure:** Upload the C program files by the due date and time. The files should be named as specified in each problem statement. Replace ROLLNO with your roll number (all small letters). **Do not upload exe files.**

**NOTE:** Meaningful messages should be printed when input is required from the user and when output is printed.

**Problem 1.** Write a C program called ROLLNO\_sum\_bits.c that asks the user to enter an integer and prints as output the number of 1s in the binary equivalent of the absolute value of the input. Hint: Use bitwise operators.

Marks: 10

**Problem 2.** Write a C program called ROLLNO\_tax.c that reads the annual income of a person and prints as output the amount of tax that the person should pay for that financial year.

The income tax slab to use is given below.

| Income Tax Slab                | Tax Rate |
|--------------------------------|----------|
| Up to Rs. 2.5 lakhs            | NIL      |
| > Rs. 2.5 lakhs to Rs. 5 lakhs | 5%       |
| > Rs. 5 lakhs to Rs. 10 lakhs  | 20%      |
| > Rs. 10 lakhs                 | 30%      |

An additional surcharge is levied on the amount of income tax at following rates if total income of the person exceeds specified limits:

10% of income tax, where the total income exceeds Rs.50 lakh up to Rs.1 crore

15% of income tax, where the total income exceeds Rs.1 crore

An additional 4% Health & Education Cess is levied at the rate of 4% on the amount of income tax plus surcharge.

Example: If the annual income of a person is Rs. 7,50,000, then

Income tax = Rs. 62500

No surcharge

Health & Education Cess = Rs. 2500

Total tax = Rs. 65000

Marks: 20

**Problem 3.** Write a C program called ROLLNO\_date.c that takes as input two dates (you need to find a way to get this input) and calculates and prints the difference between the two dates in years, months, weeks, and days. You may consider all years to have 365 days, i.e. you need not check for leap years. When you print the results, at least two digits must be there for each time unit as shown below:

Date 1: 01/01/2000

Date 2: 02/02/2010

Difference: 10 years, 01 months, 00 weeks, and 01 days

Note: You need to find out yourselves how to print the output with at least two digits as shown above.

Marks: 20