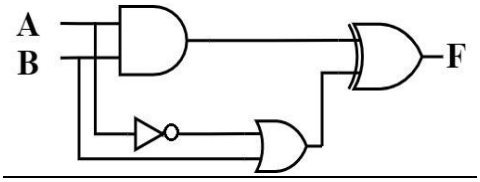
Indian Institute of Engineering Science and Technology, Shibpur
B.Tech. 1st Semester Mid-Term Examination, February 2022
Subject: Introduction to Computing (CS - 1101)

Full marks: 30 **Time: 45 minutes**

Group – A

*(*Answer any *six*: 1x6 = 6*)*

1. (a) Write the expression of *F* without minimization.



(b) What is the signed 2's complement representation of -23?
(c) Represent the following decimal numbers in BCD: 13597, 93286
(d) What will be the output of the following C code?

```
#include <stdio.h>
 int main ()
{
        int a = 4;
        int x = ++a + a++ + --a;
        printf ("Value of x = %d\n", x);
        printf ("Value of a = %d\n", a);
        return 0;
}
```

(e) Convert the hexadecimal number F3A7C2 to binary.
(f) What is the difference between RAM and ROM?
(g) What is the output of C Program with switch statement or block?

```
#include<stdio.h>
int main ()
{
        int a;
        switch(a)
        {
                printf ("Hello ");
        }
printf ("World");
return 0;
}
```

(h) Name the four storage access classes supported by the C programming language.
(i) What do you mean by a ternary operator? Give example.

Group – B

(Answer any *three*: 3x8 = 24)

For the programming problems use C language.

2. (a) Explain the use of the ***break*** statement with the help of an example.
   (b) Write a program to print the sum of the following series
   $$S = 1^a - 2^a + 3^a ... \text{upto } N^{th} term \quad a, N \in Z^+$$
   (4+4)

3. Write a program that can print the binary equivalent of a decimal integer. Here decimal integer is user input. (8)

4. Perform the arithmetic operations (+42) + (-13) and (-42) - (-13) in binary using the signed-2's-complement representation for negative numbers. (4 + 4)

5. (a) What do you mean by universal gates?
   (b) Show that NOR is a universal gate. (2 + 6)