

**Instructions**

1. Answer all questions
2. Do not copy from any source, if found, you will be penalized according to institute norms.
3. Write neatly in A4 sheets (White).
4. On all pages write
  - a. Your name
  - b. Roll number
  - c. Question paper code
5. Scan properly and convert into .pdf format as a single file
6. For uploading the file in Google form, Name the file as "Rollno.pdf"  
If you don't upload the correct file or if you submit an invalid file, e-mailing faculty or uploading later is not allowed.

**Paper code: 1B**

1. (a). Simplify the following expression using Boolean Algebra [2 M]  

i)  $X'YZ + XY'Z' + X'Y'Z' + XY'Z + XYZ$

ii)  $(W' + Y' + Z')(W' + Y')(Y' + Z')$

  
(b).  $X=2, Y=6$ , Perform  $X-Y$  and  $Y-X$  using 2's complement method [2 M]
2. Convert the numbers.  
(a).  $(127)_8$  to binary and hexadecimal format. [2 M]  
(b). Write the number  $(23)_{10}$  in BCD, Binary, Excess-3, and Gray Code [2 M]
3. Write the simplified Boolean expression for the output function F using Boolean Algebra and draw the logic circuit [2 M]

Inputs			Output
a	b	c	F
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

4. Express the Boolean functions  $F = X' + YZ'$  as sum of Minterms and product of Maxterms. [2 M]