

## Assignment 02

BRAC University  
Semester: Spring 2024

Course No: CSE251

Course Title: Electronic Devices and Circuits

Faculty: AGS

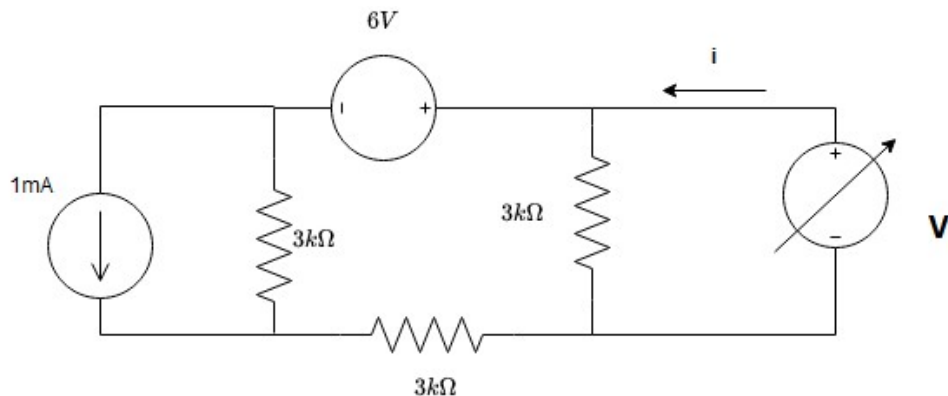
Marks: 50

Deadline: 27 Feb.-11:59 pm

1. Draw I-V characteristics for the following circuits-(CO1)

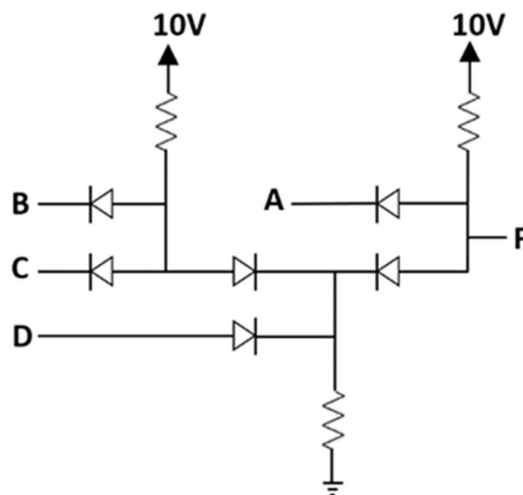
[10]

[Hint: Apply Source Transformation]



2. Assuming x, y, z are Boolean variables, analyze the circuits below to find an expression of “f” in terms of x, y, and z. (CO2)

[5]



B= 2V, C= 1.3V, D= 0.7V, A= 3.5V, F=?

c) **Implement** the following expressions using ideal diodes: (CO2)

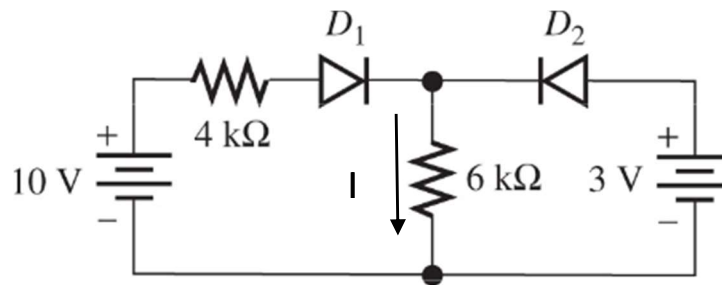
[2x2.5=5]

i.  $xy + yz + zx$

iv.  $f = (A+B)XY + C+DE$

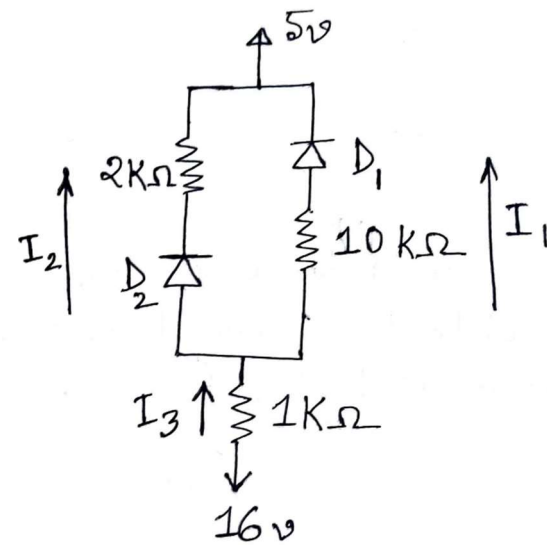
3. (CO2)

a) **Analyze** the circuit to find the value of current  $I$ . Here, use the Method of Assumed State using the CVD model of diode with  $V_{do} = 0.7V$ . **Validate** your assumptions about the states of the diodes. [10]



4. (CO2) [10]

**Analyze** the circuit given above. **Calculate** the values of  $I_1$ ,  $I_2$ ,  $I_3$ . You must **validate** your assumptions. Use the Constant-Voltage Drop model (CVD Model) with  $V_{do} = 0.8V$ .



5. (CO2) [10]

Find  $V_o$ ,  $i_{D1}$  and  $i_{D2}$  for  $R = 1\text{ k}\Omega$ . Assume diode constant voltage drop model with  $V_{do} = 0.7V$ . In each case, write down the states of the diodes (ON/OFF). You must verify your assumptions.

