CSE251: ASSIGNMENT-2

Full Marks: 60

1. [CO3]
a) **Design** a circuit using OP-Amp that follows the VTC shown in Figure 01.

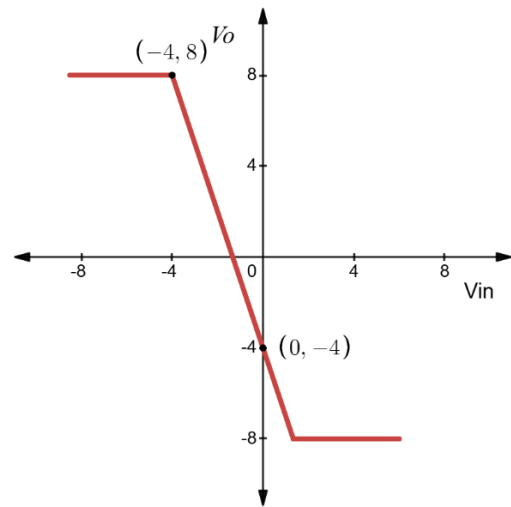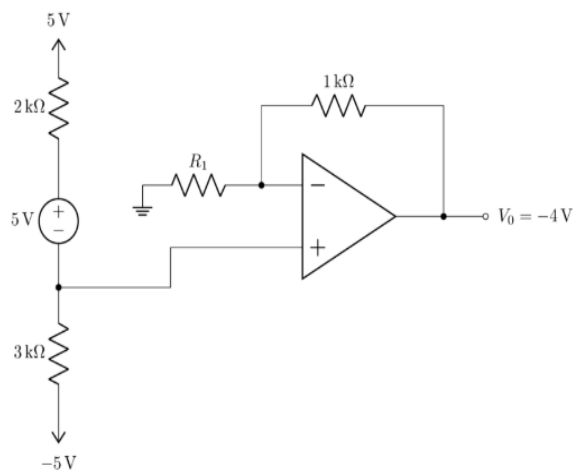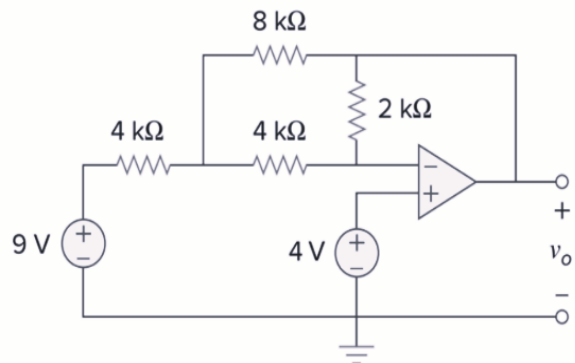b) Draw the waveform of V_O when $V_{in} = 2\sin(\omega t)$

Figure 01

2. [CO2]

a.

Determine R_1 for the circuit shown above

b.

Determine V_O for the circuit shown above

3. [CO2]
Consider the circuit shown in Figure 02 Determine the diode current I_D and diode voltage V_D for
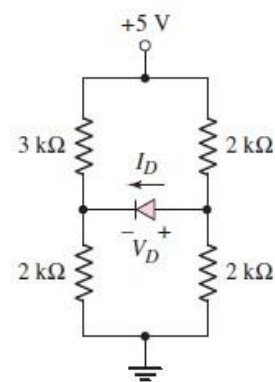
    a) $V_{Do} = 0.6v$

    b) $V_{Do} = 0.3v$

Figure 02

4. [CO2]

Analyze the circuit shown in figure-03 to Find I_{D1}
and I_{D2} for   a) R = 100KΩ and
           b) R =0.02KΩ
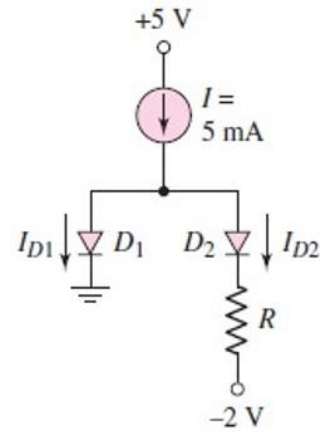Use CVD model with V_{Do} = 0.7v.
[Validate assumptions]

Figure 03

5. [CO2]
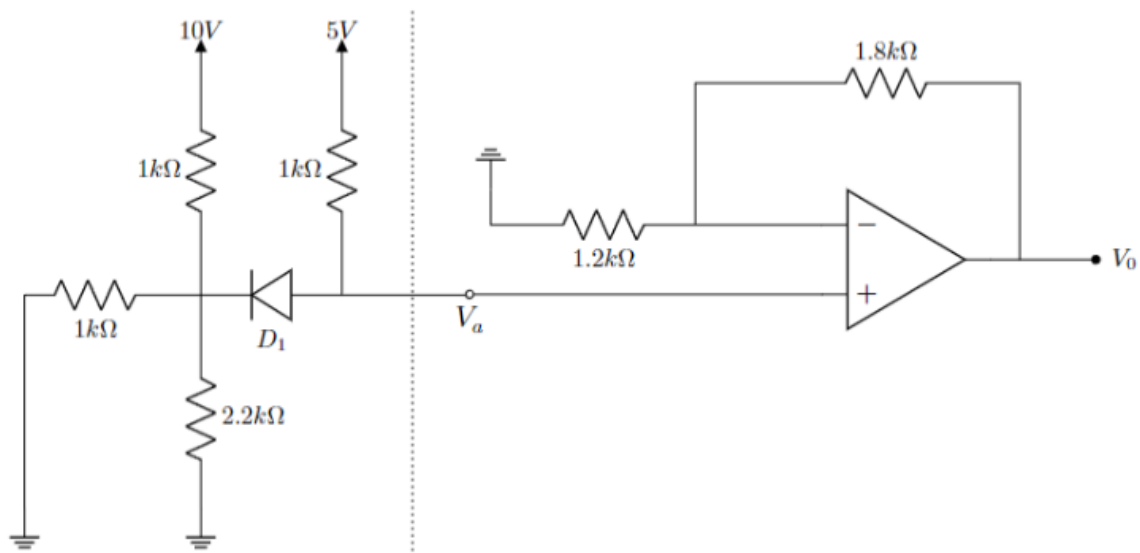

Figure 04

The saturation voltages of the diode are given as $V^+{}_s$ = 10V and $V^-{}_s$ = -10V. Assume V_{DO} = 0.7V
   a) Determine the operating state of the diode. You must validate your assumption.
   b) Calculate the value of V_a and V_o.

6. [CO1] **Draw** the I-V characteristics of a diode for Ideal, CVD and CVD+R model and show equivalent circuit for each model.