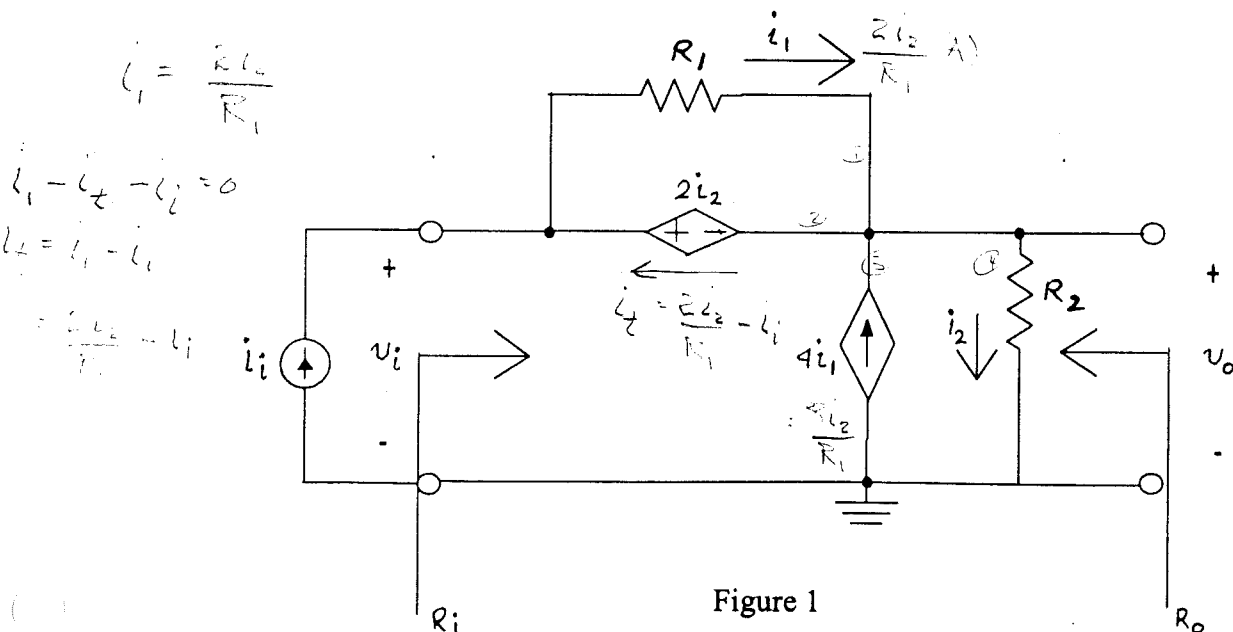


Course	Number	Section	
ELECTRONICS I	ELEC 311/2	U & W	
Examination	Date	Time	# of pages
Mid-term	Wednesday, October 15, 1997	11:45 a.m. – 1:00 p.m..	3
Instructor(s)			
Section U: Dr. M.O. Ahmad; Section W: Dr. R. Raut			
Materials allowed: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Please specify)			
Calculators allowed: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes			
Any non-programmable calculator is allowed			
Special Instructions:			
Answer all questions. All questions are of equalvalue. Your answers must be clear, concise, reasoned, and neatly organized.			

Given the circuit of Figure 1, derive expressions for:

- the open circuit transresistance gain R_m ,
- the input resistance R_i , and
- the output resistance R_o .



2. The circuit shown in Figure 2 employs an ideal op amp. Derive expressions for:

- the input resistance R_i , and
- the output resistance R_o .

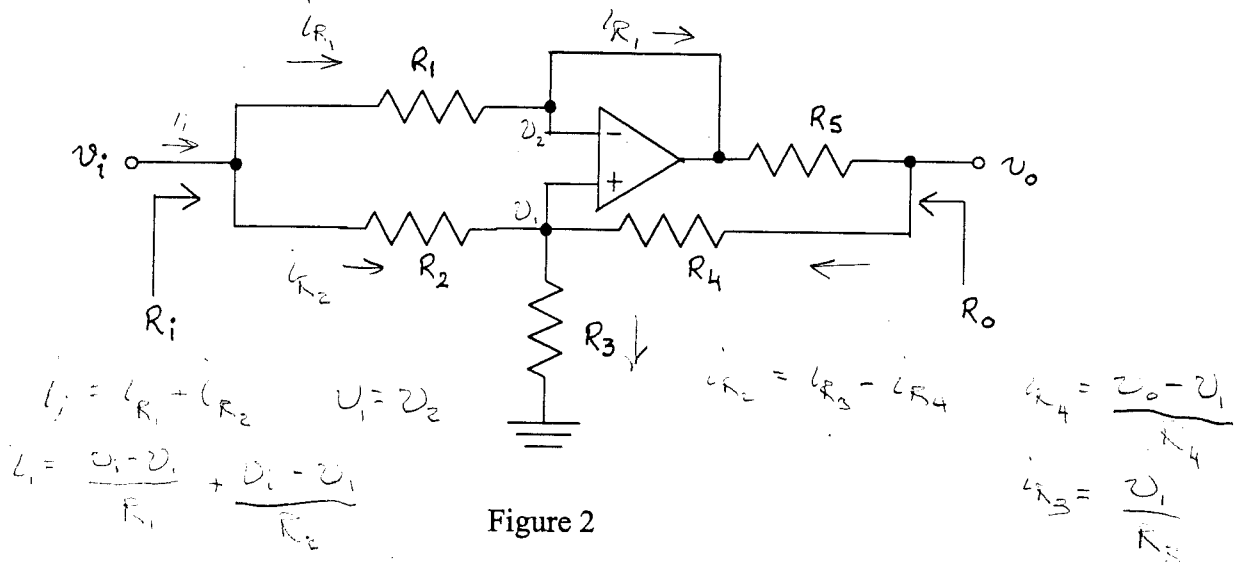


Figure 2

3. The circuit shown in Figure 3 employs an ideal op amp.

- Derive an expression for the transfer function $T(s) = V_o(s)/V_i(s)$ and arrange it in the standard form.
- Find the dc gain and the 3-dB frequency

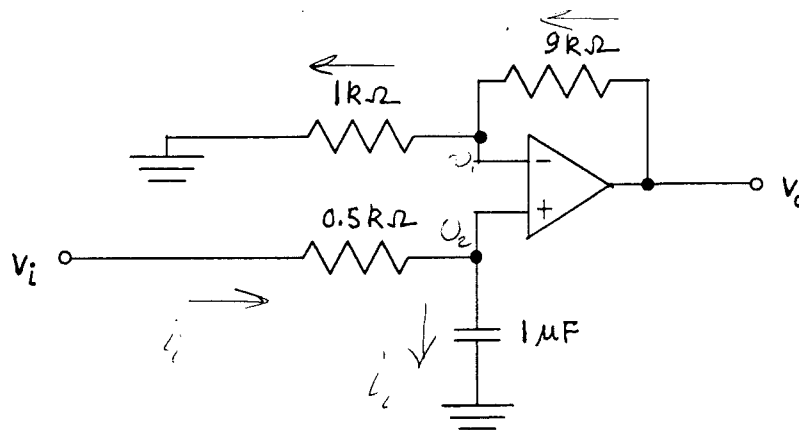


Figure 3

In the circuit shown in Figure 4, v_1 is a sinusoid voltage of 10-V rms. Find the value of R so that the average diode current is 1 mA. The diode is ideal.

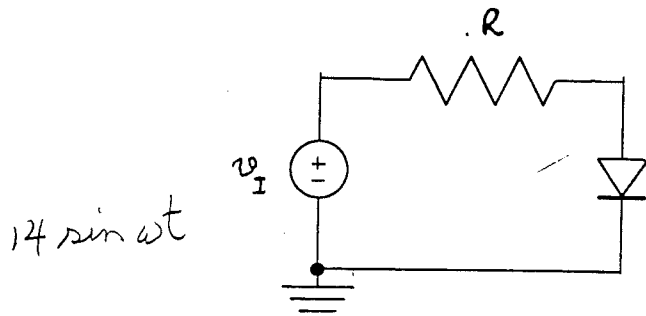


Figure 4

1. The circuit shown in Figure 2 employs an ideal op amp. Derive expressions for:

- the input resistance R_i , and
- the output resistance R_o .

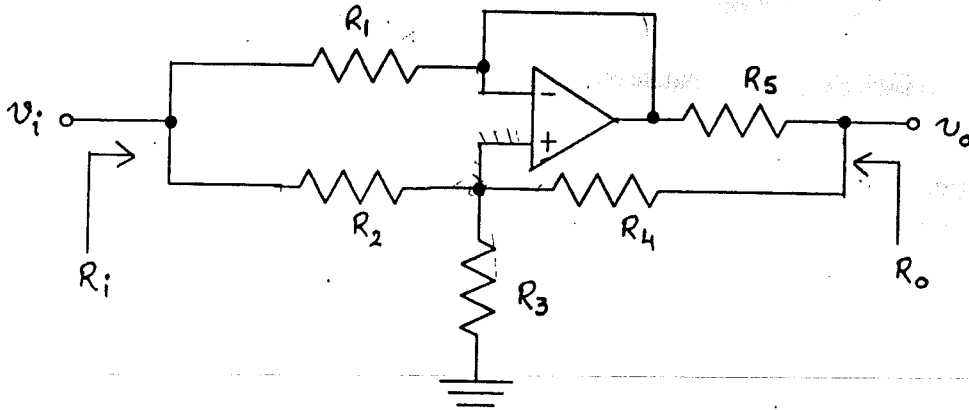


Figure 2

3. The circuit shown in Figure 3 employs an ideal op amp.

- Derive an expression for the transfer function $T(s) = V_o(s)/V_i(s)$ and arrange it in the standard form.
- Find the dc gain and the 3-dB frequency

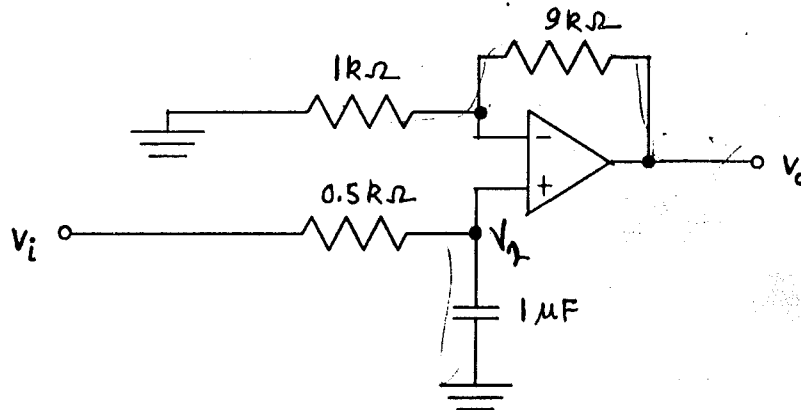
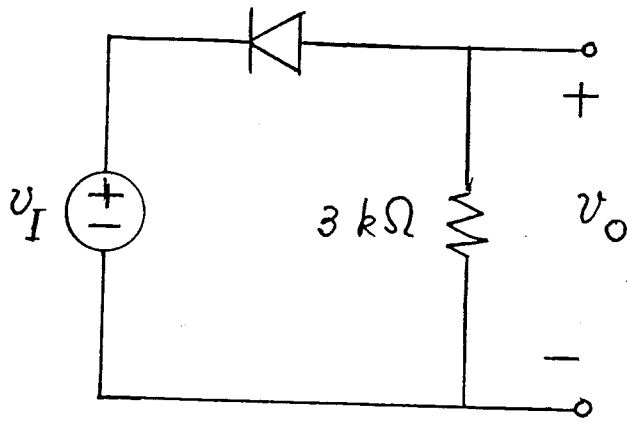


Figure 3

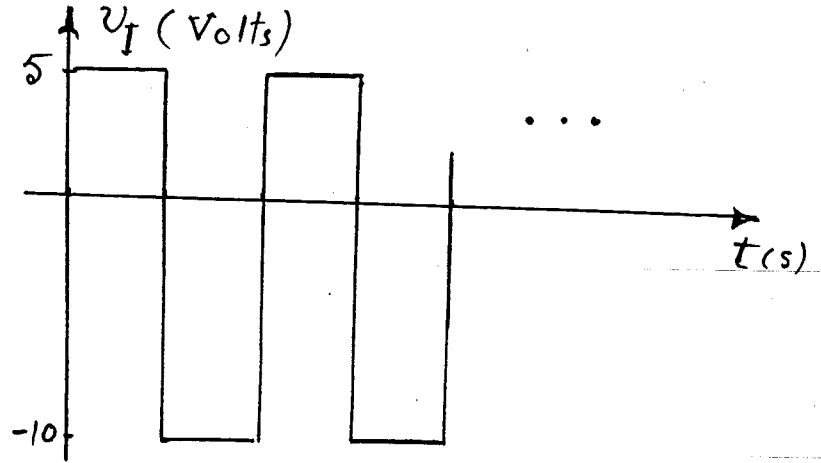
2. Assume that the diode in the circuit of Figure 2(a) has a constant voltage drop of 0.7 V when conducting. The input is a voltage waveform as shown in Figure 2(b).

- (a) Draw the output waveform v_o .
- (b) Find the average value of v_o .
- (c) Find the value of the peak forward current for the diode
- (d) Find the peak reverse voltage of the diode

(7 marks)



(a)

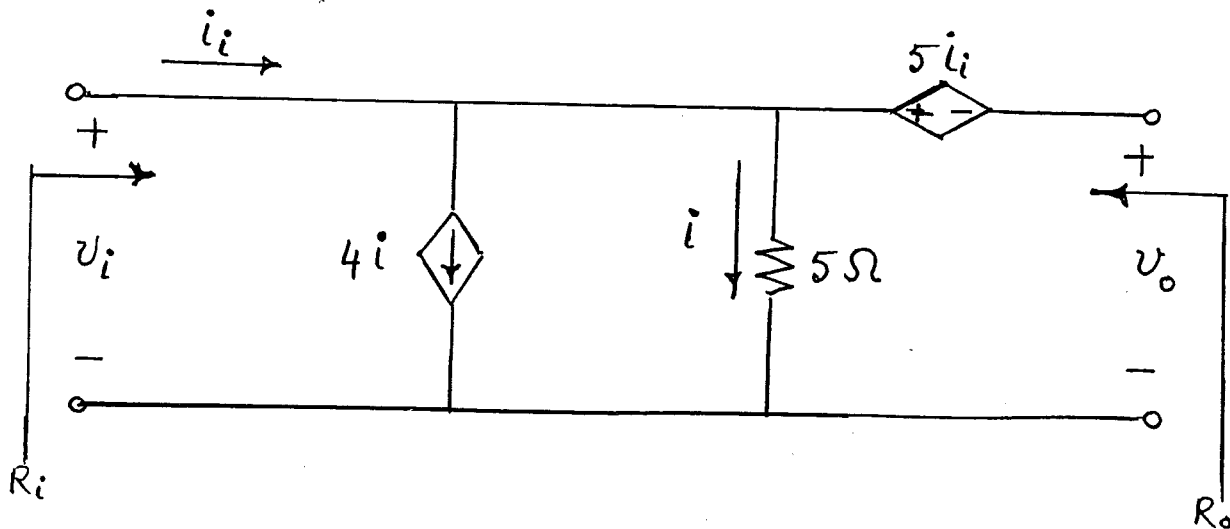


(b)

3. For the circuit shown in Figure 3, find the values of

- (a) The voltage gain v_o/v_i
- (b) the input resistance R_i
- (c) the output resistance R_o .

(6 marks)



CONCORDIA UNIVERSITY
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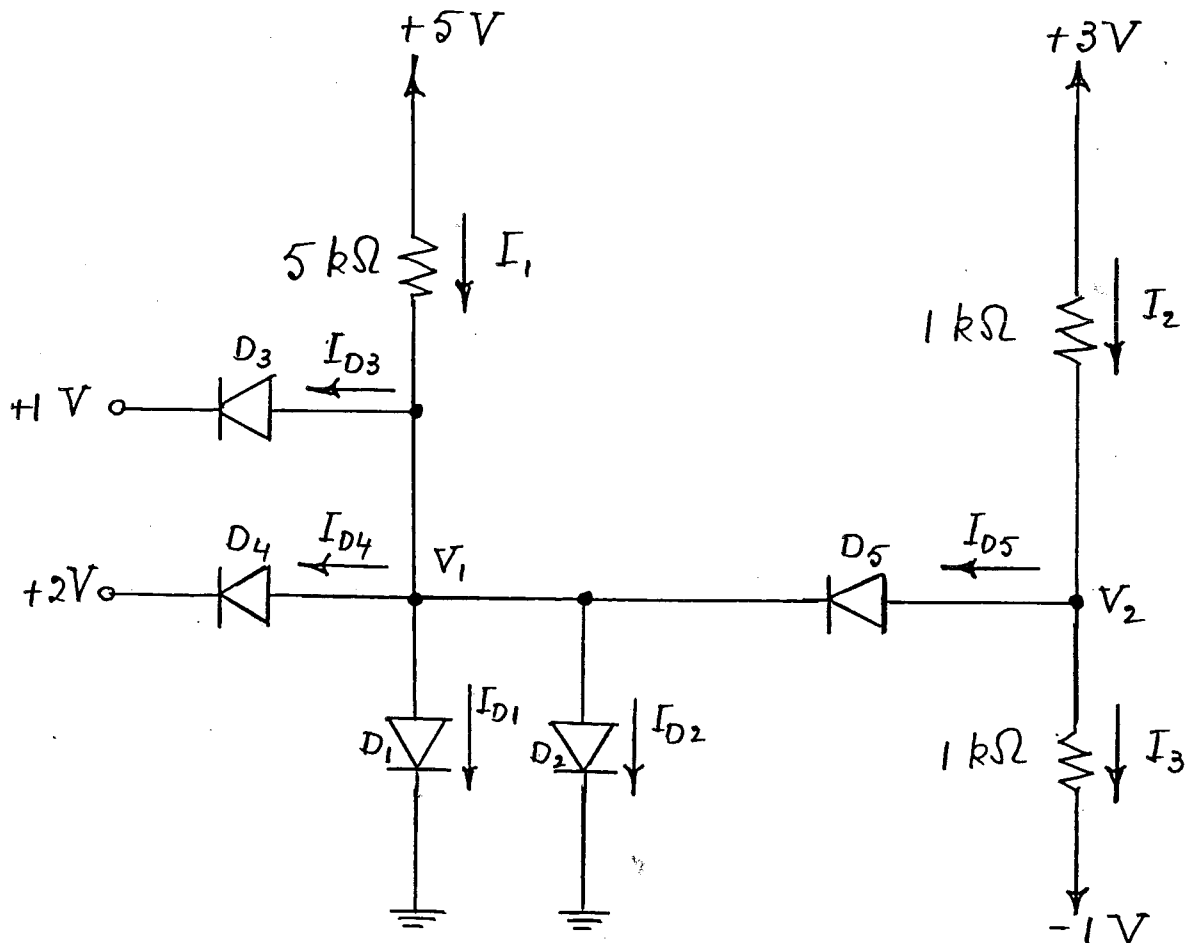
October 23, 1998

ANSWER ALL QUESTIONS

Time Allowed: 50 minutes

1. Assume that all the diodes in the circuit of Figure 1 are ideal. Find the values of the currents I_{D1} to I_{D5} and I_1 to I_3 .

(7 marks)



PLEASE TURN OVER

2. The circuit shown in Figure 2 employs an ideal op amp. Derive expressions for:

- the input resistance R_i , and
- the output resistance R_o .

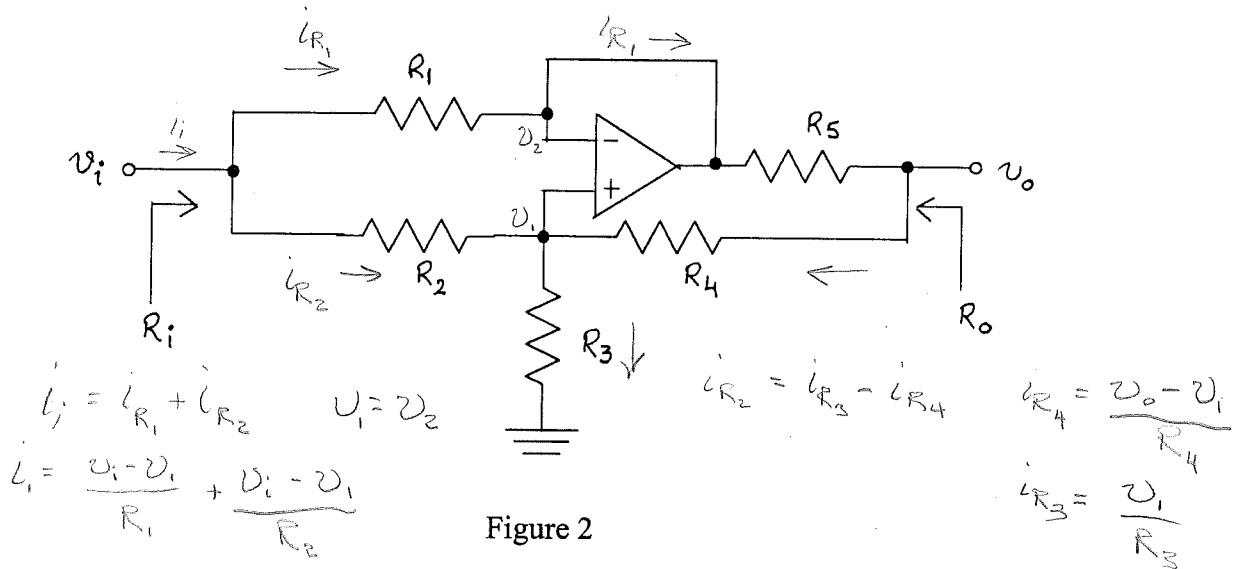


Figure 2

3. The circuit shown in Figure 3 employs an ideal op amp.

- Derive an expression for the transfer function $T(s) = V_o(s)/V_i(s)$ and arrange it in the standard form.
- Find the dc gain and the 3-dB frequency

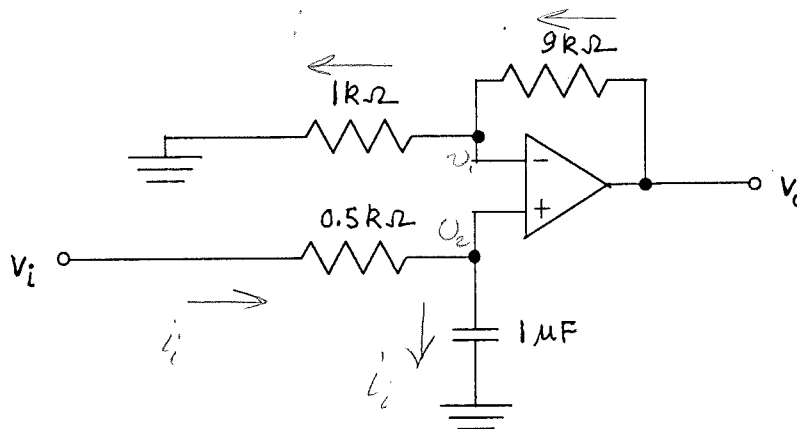
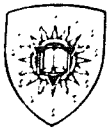


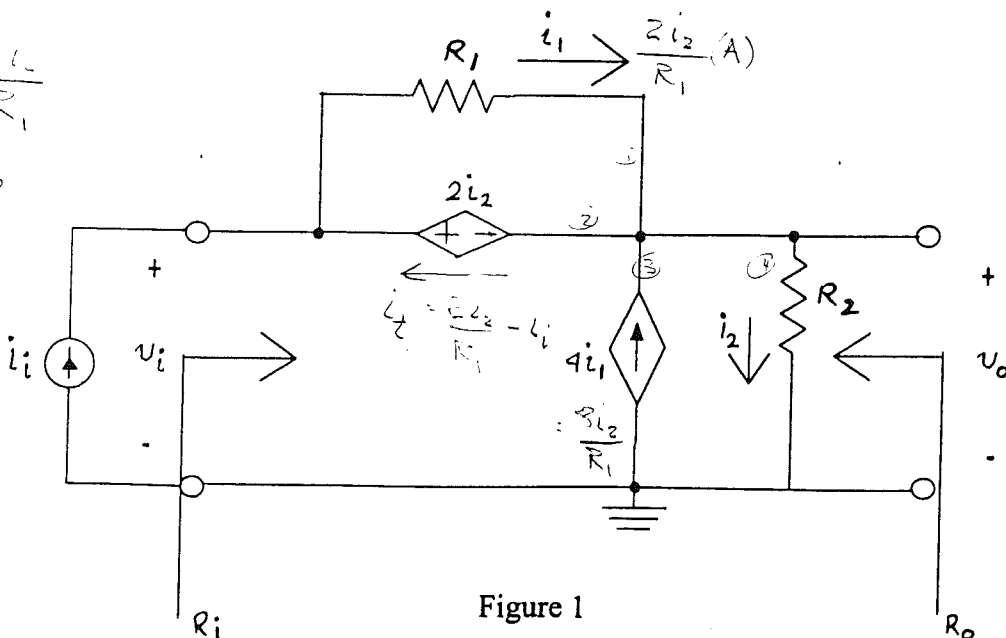
Figure 3



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CONCORDIA UNIVERSITY
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ELECTRONICS I (ELEC 311/2)
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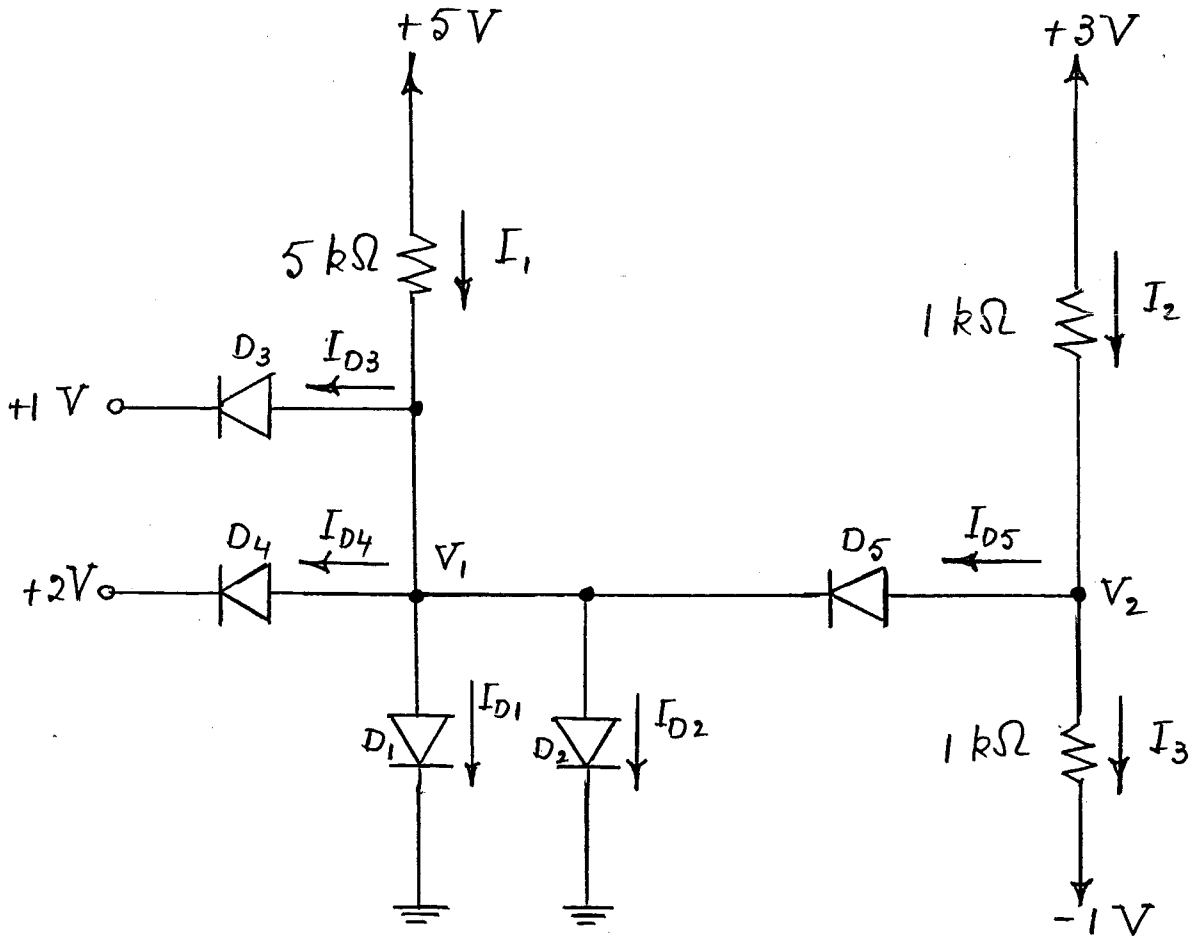
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ANSWER ALL QUESTIONS

Time Allowed: 50 minutes

1. Assume that all the diodes in the circuit of Figure 1 are ideal. Find the values of the currents I_{D1} to I_{D5} and I_1 to I_3 .

(7 marks)



PLEASE TURN OVER