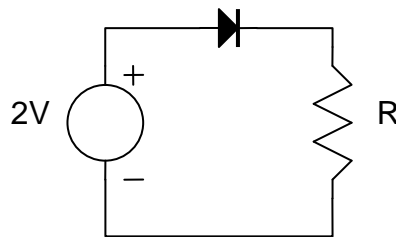


**Question 1**

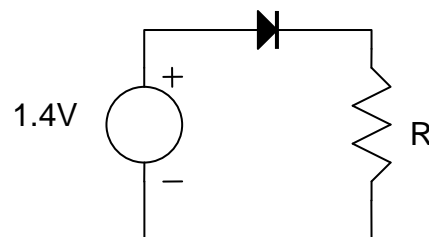
Find the current in the circuit if  $R = 120\Omega$ . (Take the turn-on voltage of a silicon diode to be  $0.7V$ ).

**Question 2**

A diode has the following characteristics:

V(V)	0	0.1	0.2	0.3	0.4	0.5	0.6
I(mA)	0	0.01	0.05	0.3	3.0	15.0	40.0

It is part of the following circuit:

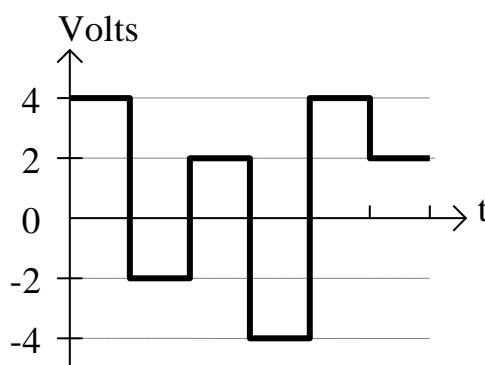


- By graphical analysis, find the current through the circuit if  $R = 100\Omega$ .
- What value of resistor will give a current of  $20mA$  in the circuit and what will the voltage across the diode be?

**Question 3**

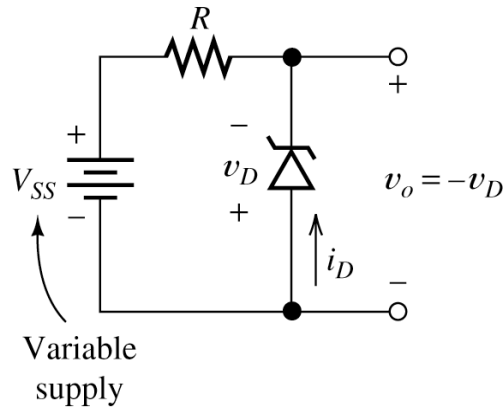
A full wave rectifier (bridge configuration; Figure Q3. see page 2 of this tutorial) with a 1:1 transformer uses silicon diodes and has an input voltage as shown below.

- What will the output waveform look like? (Take the turn-on voltage of a silicon diode to be  $0.7V$ ).
- Assuming fast enough switching, calculate the mean (DC) output voltage level.



**Question 4**

A regulator circuit is setup as shown below. The resistor  $R = 750\Omega$ ; find  $v_D$  and  $i_D$  for  $V_{SS} = 15V$  and for  $V_{SS} = 20V$ .



The Zener diode has the following reverse-bias characteristics:

V(V)	0	-5	-7.5	-8	-8.5	-9	-9.5
I(mA)	0	-0.1	-0.15	-5.0	-10.0	-15.0	-20

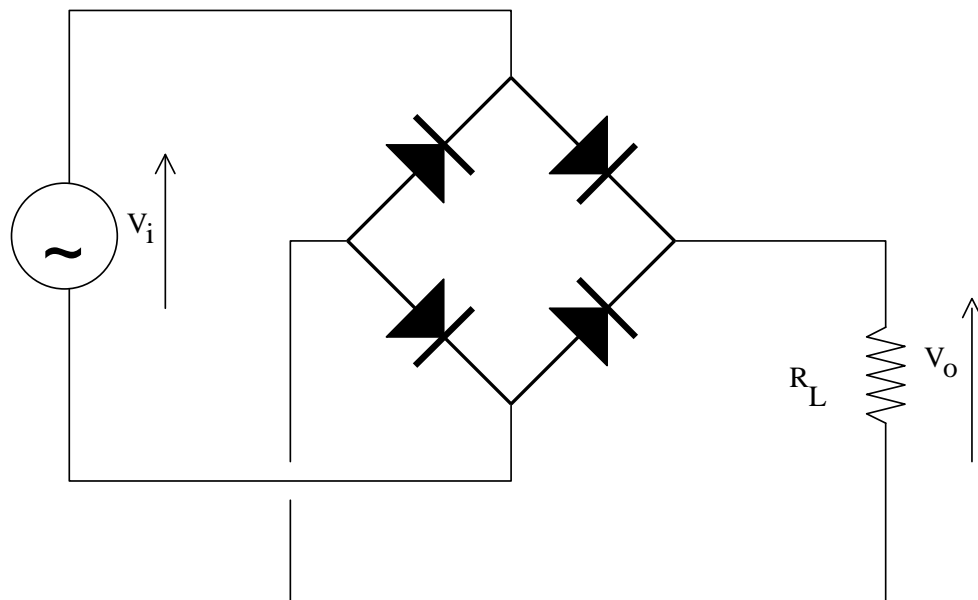


Figure Q3 - Full Wave Rectifier