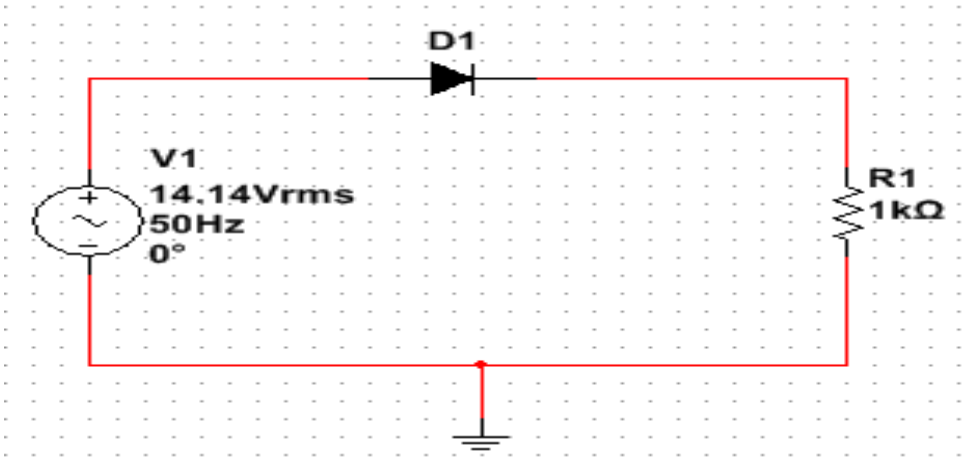
Experiment Two Diode Applications

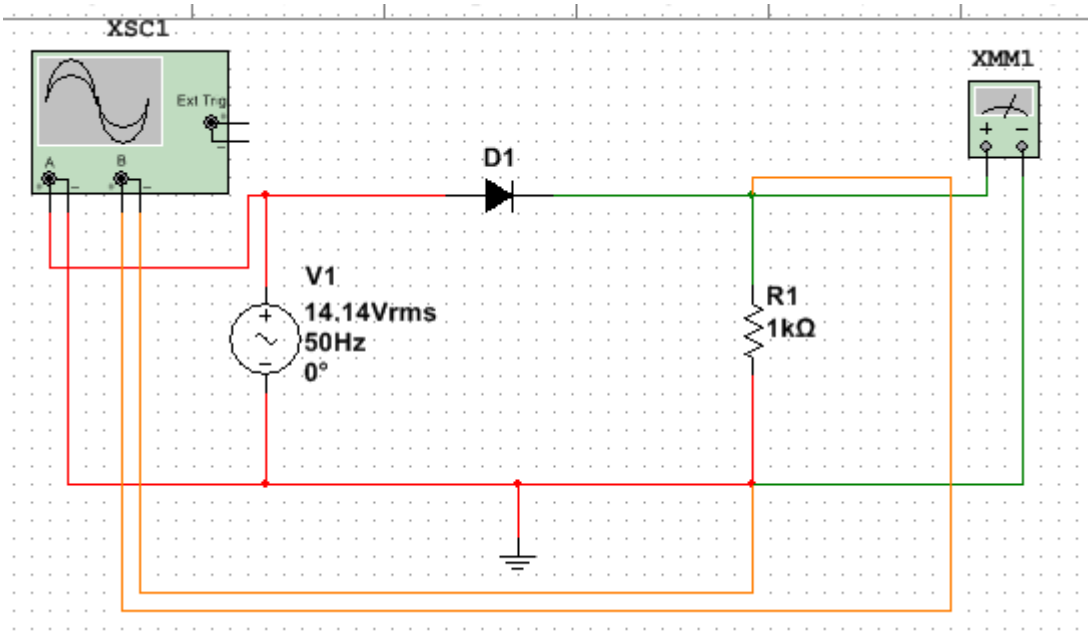
Part One: Half-wave Rectifier

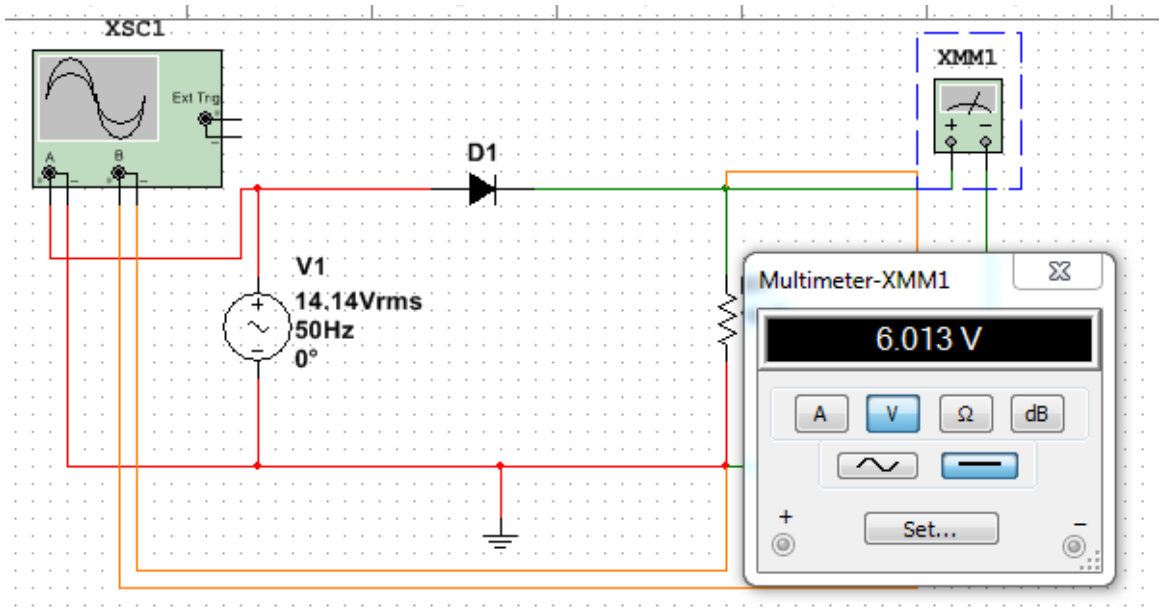
AIM: To study the input signal in the diode and the output signal from it, then calculate the output d.c voltage.

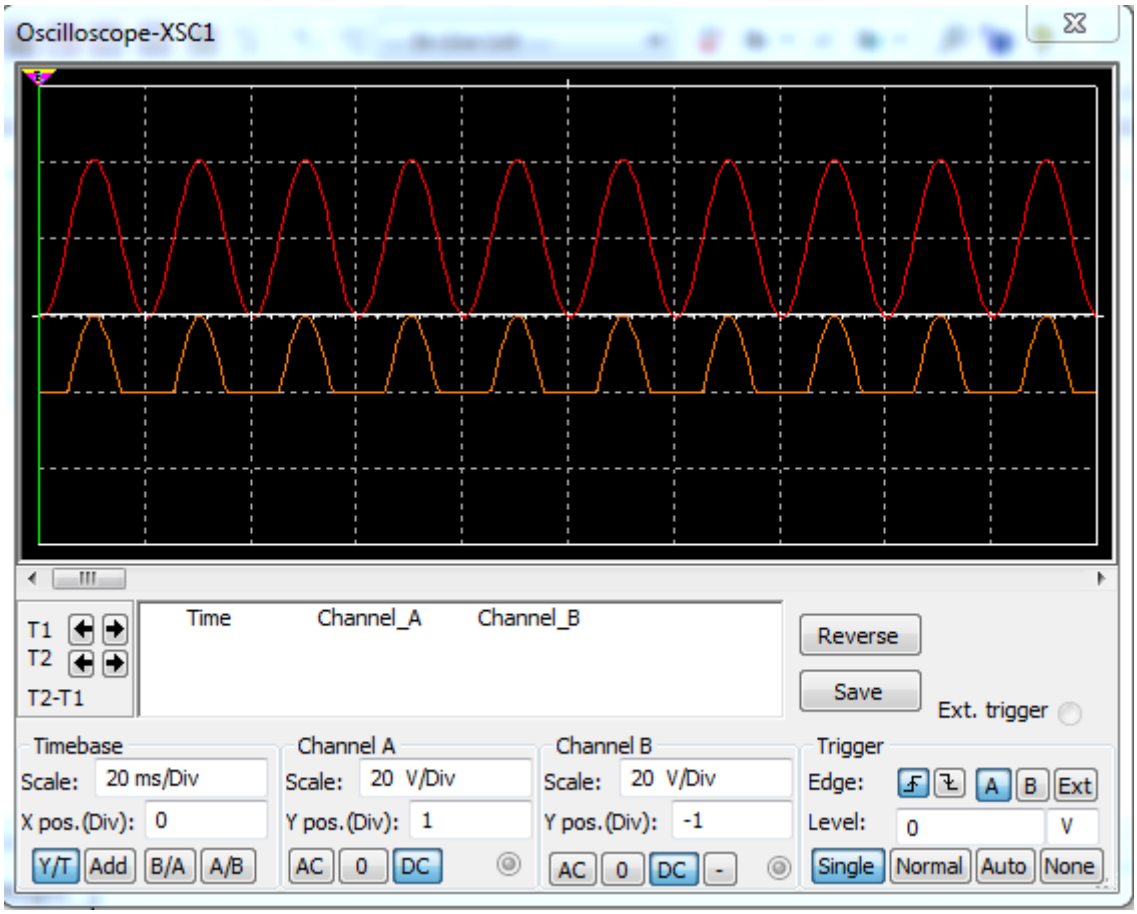
Apparatus: Virtual diode,A.C power source = (14.14 rms and 50 Hz), Resistance =1 kΩ,Ground, Oscilloscope and Multimeter.

Circuit diagram:






XSC1
Ext Trg
A
B
D1
XMM1
V1
14.14Vrms
50Hz
0°
Multimeter-XMM1
6.013 V
A
V
Ω
dB
Set...


Oscilloscope-XSC1
T1
T2
T2-T1
Time
Channel_A
Channel_B
Reverse
Save
Ext. trigger
Timebase
Scale: 20 ms/Div
X pos.(Div): 0
Y/T
Add
B/A
A/B
Channel A
Scale: 20 V/Div
Y pos.(Div): 1
AC
0
DC
Channel B
Scale: 20 V/Div
Y pos.(Div): -1
AC
0
DC
-
Trigger
Edge:
A
B
Ext
Level: 0 V
Single
Normal
Auto
None

Discussions:

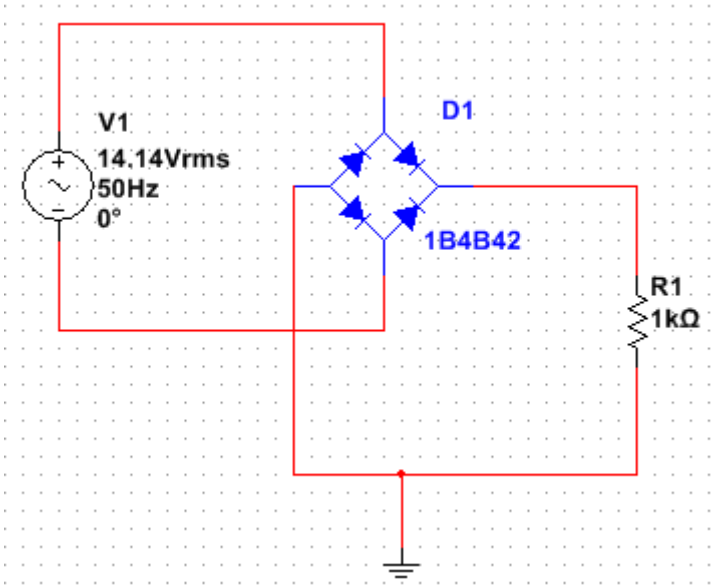
1. Why is there a difference between the peak of the input signal and the output signal?
2. What is the output Dc voltage?
3. What are the disadvantages of this circuit?
4. What is the basic purpose of this circuit in electrical devices?
5. How can we improve this circuit?

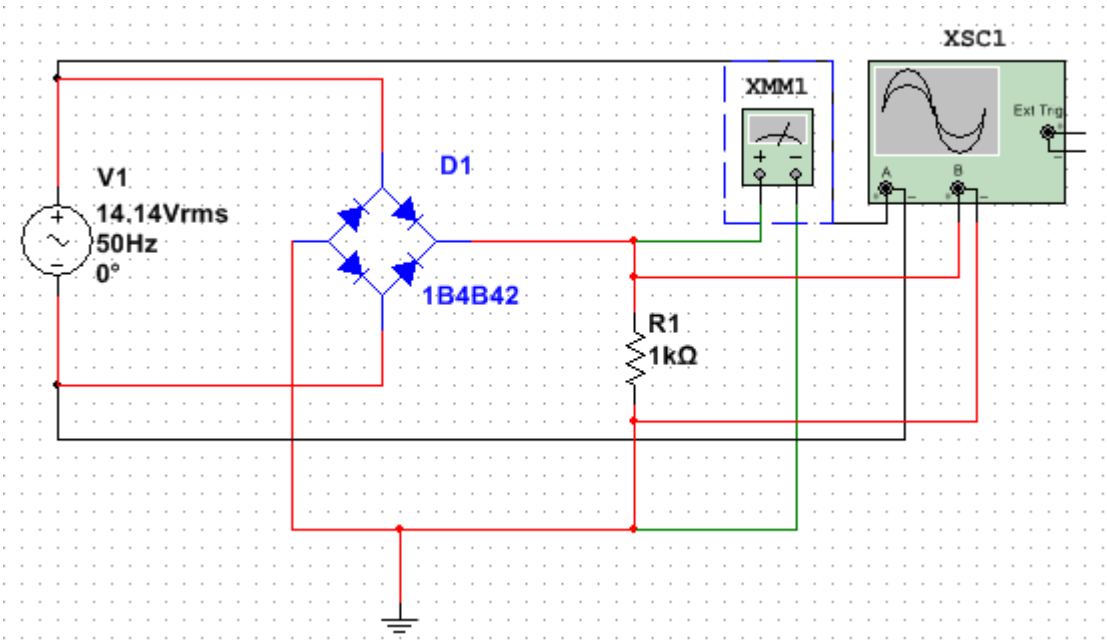
Part Two: Full-wave Rectifier

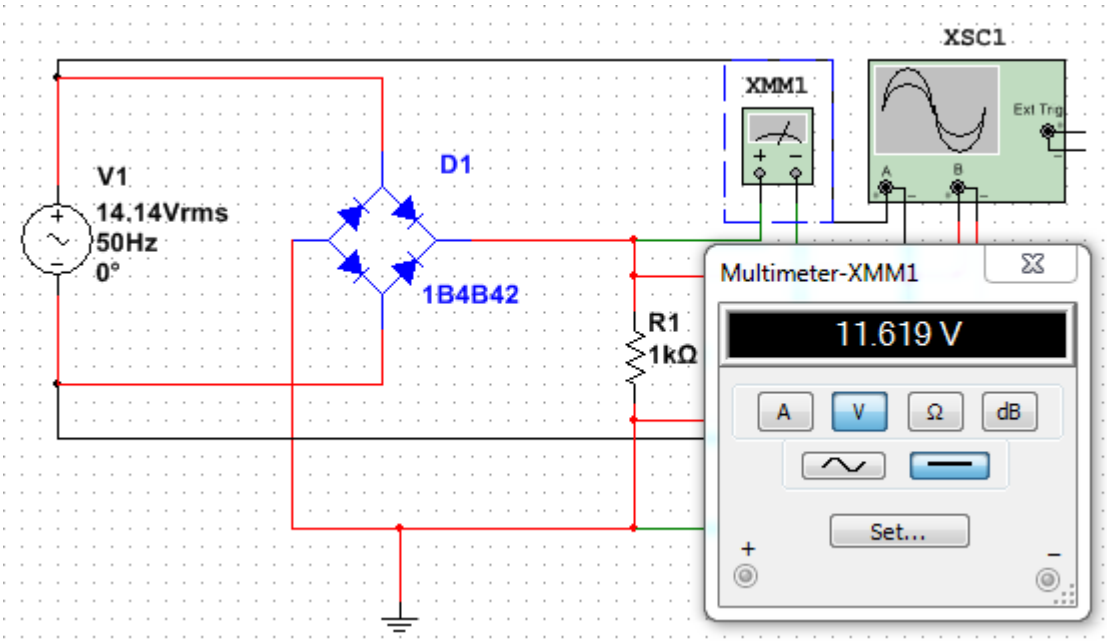
AIM: To study the input signal in the diode and the output signal from it, then calculate the output d.c voltage.

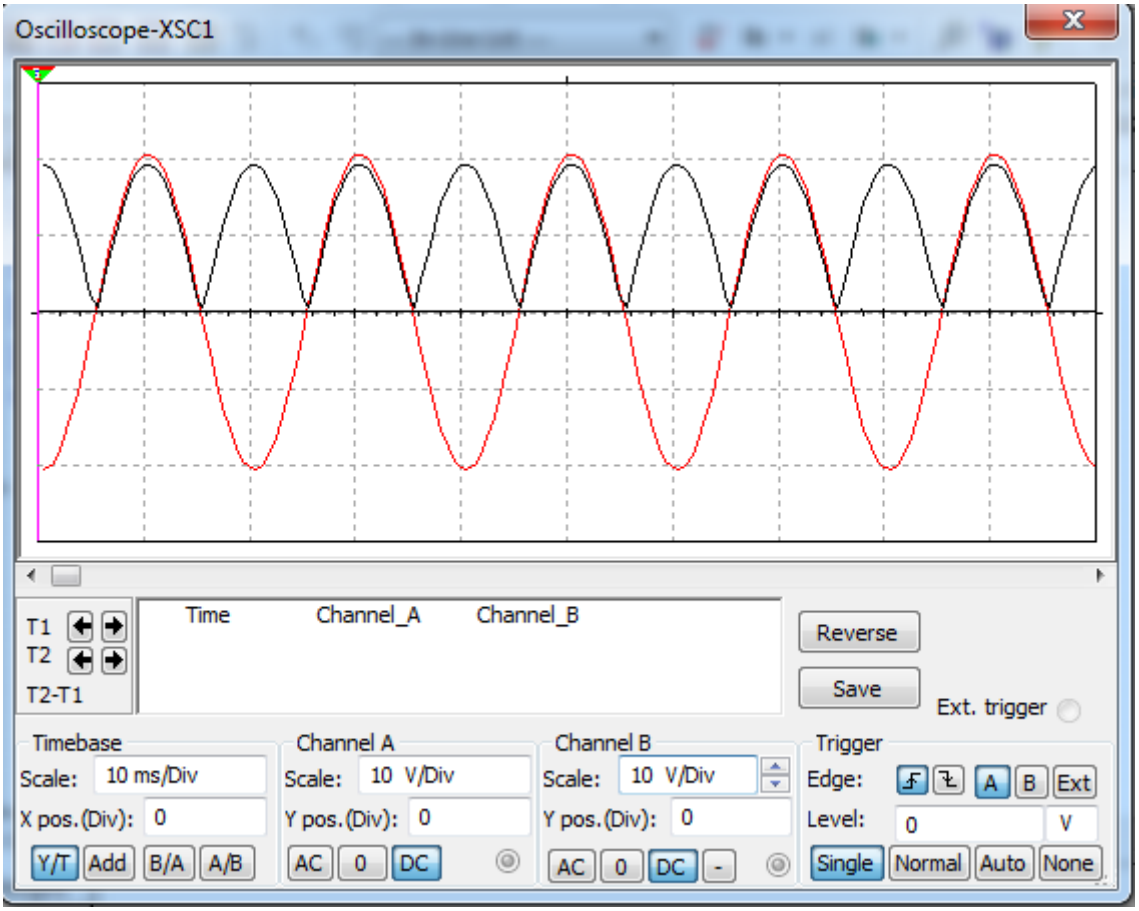
Apparatus: Full Wave Bridge (FWB) type 1B4B42,A.C power source = (14.14 rms and 50 Hz), Resistance =1 kΩ,Ground, Oscilloscope and Multimeter.

Circuit diagram:






XSC1
XMM1
Ext Trg
A
B
V1
14.14Vrms
50Hz
0°
D1
1B4B42
R1
1kΩ
Multimeter-XMM1
11.619 V
A
V
Ω
dB
Set...
+
–


Oscilloscope-XSC1
T1
T2
T2-T1
Time
Channel_A
Channel_B
Reverse
Save
Ext. trigger
Timebase
Scale: 10 ms/Div
X pos.(Div): 0
Y/T
Add
B/A
A/B
Channel A
Scale: 10 V/Div
Y pos.(Div): 0
AC
0
DC
Channel B
Scale: 10 V/Div
Y pos.(Div): 0
AC
0
DC
-
Trigger
Edge:
A
B
Ext
Level: 0 V
Single
Normal
Auto
None