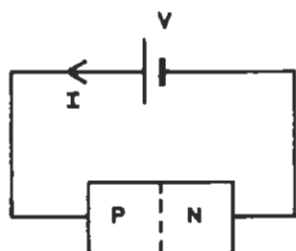


SEMICONDUCTORS (A COURSE)

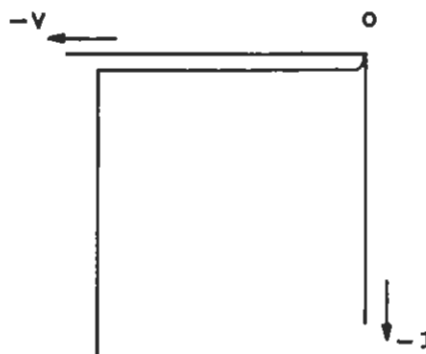
1.



This P-N diode is made of silicon.

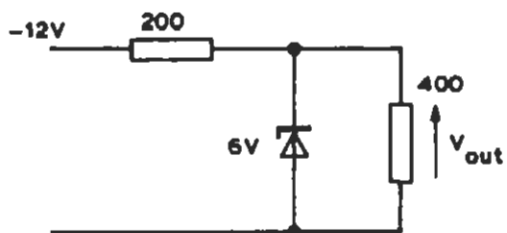
Draw a graph showing how I varies with V, marking values on the voltage axis.

2. This characteristic is for a diode in reverse bias. What is the name given to this type of diode?



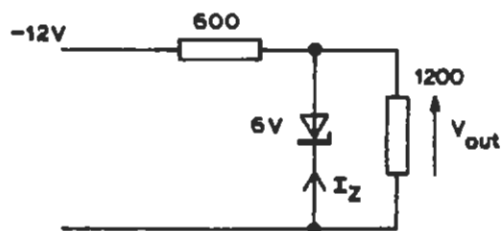
3. Referring to the characteristic in question (2), what happens to the current below breakdown voltage if the diode is heated?

4.



What voltage is V_{out} ?

5.

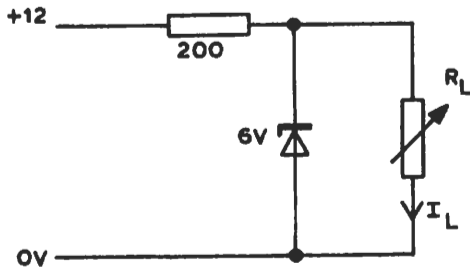


What voltage is V_{out} ?

SEMICONDUCTORS (A COURSE)

6. Referring to diagram in question (5), what is I_Z ?

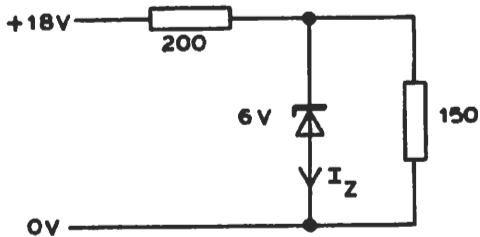
7.



What is the maximum load current that can be delivered at 6 volts?

8. Refer to diagram in question (7). What is maximum possible Zener dissipation?

9.



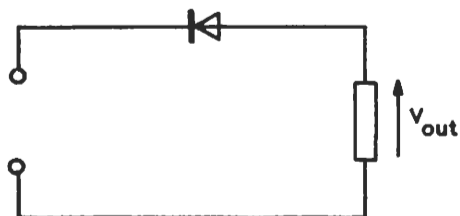
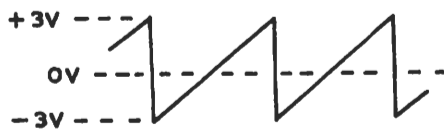
What is I_Z ?

10.



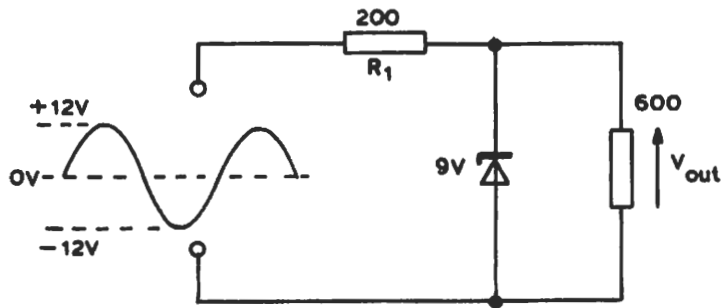
Label Anode and Cathode for this diode.

11.



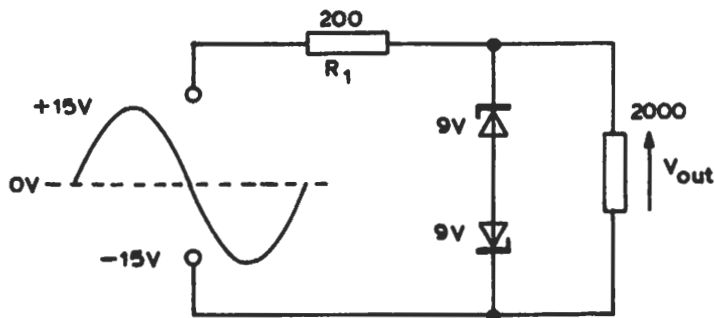
Sketch the waveform for V_{out}

12.



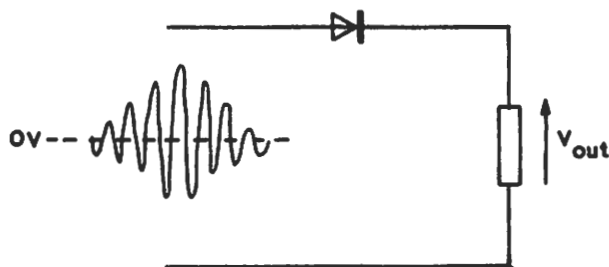
Sketch V_{out}

13.



Sketch V_{out}

14.

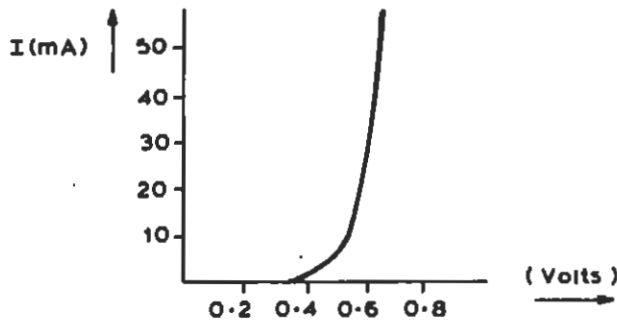


Sketch V_{out}

SEMICONDUCTORS (A COURSE)

ANSWERS

1.



Diode is forward-biased.
Typical current values for
a small diode are shown.

2. Zener (or Avalanche, under certain conditions).

3. The current increases.

4. Zero, as diode is forward biased.

5. 6 volts

6. 5 mA

7. 30 mA

8. 180 mW

9. 20 mA

10. Anode at right, cathode at left.

11.



12.



13.



14.

