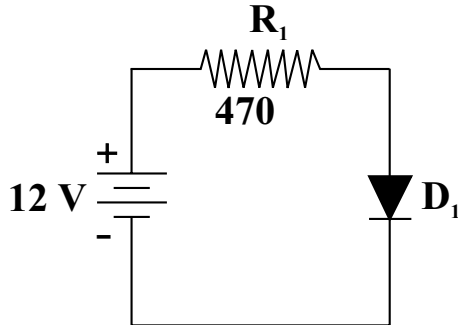


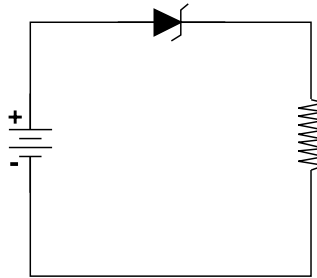
Tutorial 7 Diodes

Name _____ Student # _____ Section _____

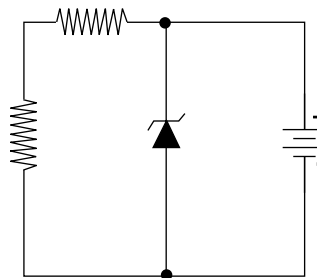
- 1) Determine the values of V_{D1} , V_{R1} , P_{D1} , and I_T for the circuit shown. *Use the practical diode.*
Show all calculations



- 2) For each circuit below, put a check mark beside the proper answer.
 Is the zener diode in the circuit correctly biased for use as a regulator ?

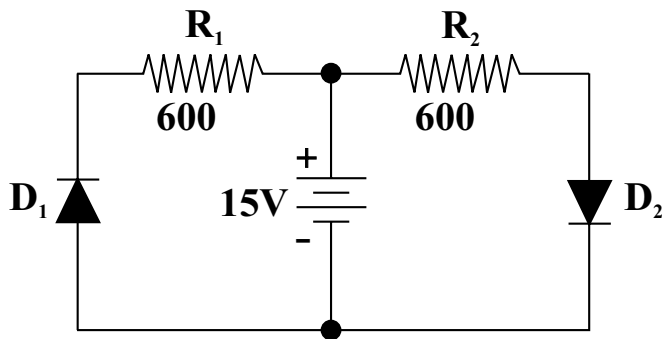


Correctly biased	<input type="checkbox"/>
Incorrectly biased	<input type="checkbox"/>



Correctly biased	<input type="checkbox"/>
Incorrectly biased	<input type="checkbox"/>

- 3) Determine the values of V_{D1} , V_{R1} , and I_1 for the circuit shown. *Use the practical diode.*
Show all calculations

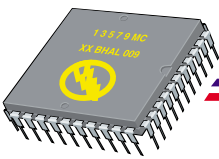


Answers

① V_{D1} _____

① V_{R1} _____

① I_1 _____



4) At room temperature, the barrier potential for a silicon diode is approximately: _____

Choose the answer below that is most correct for questions 5 through 11.

5) A semiconductor has:

- A) 1 valence electron
- B) 8 valence electrons
- C) 0 valence electrons
- D) 4 valence electrons

ANSWER _____

6) The reverse leakage current in a silicon diode:

- A) is very small
- B) is very large
- C) increases for higher temperatures
- D) Both A and C above

ANSWER _____

7) A pure semiconductor material is called:

- A) a stiff conductor
- B) an intrinsic semiconductor
- C) an intrinsic conductor
- D) an extrinsic semiconductor

ANSWER _____

8) At room temperature, the barrier potential for a germanium diode is approximately:

- A) 0.7 V
- B) 1.7 V
- C) 0.3 V
- D) 0.6 V

ANSWER _____

9) Current flows easily in a:

- A) forward-biased diode
- B) reverse-biased diode
- C) diode with zero bias voltage applied
- D) forward or reverse biased diode

ANSWER _____

10) For a reverse biased diode:

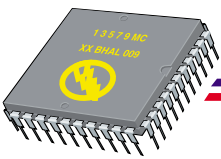
- A) the depletion layer becomes narrower
- B) the depletion layer becomes wider
- C) the width of the depletion layer stays the same
- D) current flows easily

ANSWER _____

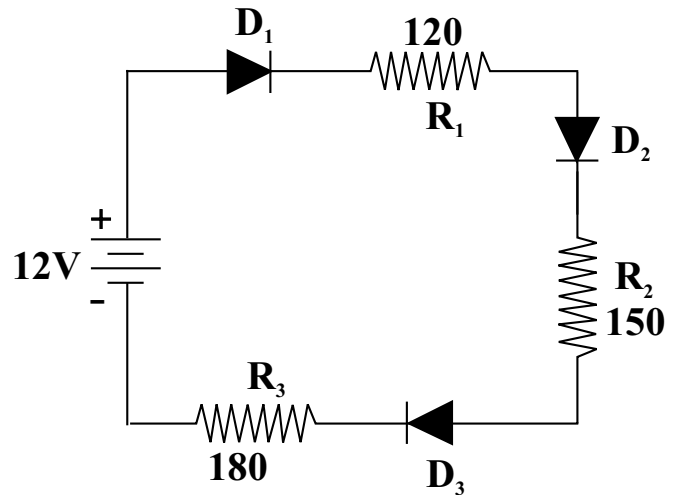
11) A vacancy in the valence orbit of a semiconductor atom is called a:

- A) forbidden gap
- B) free electron
- C) negative ion
- D) hole

ANSWER _____



- 12) Calculate the value for V_{R_2} for the circuit shown. When measured, V_{R_2} is found to be only 3.1 V. Calculate the percent error between the measured and calculated value.



- 13) A diode has a $P_{D(max)}$ rating of 750 mW. What is the limit on the value of the average forward current for the device.
- 14) A small silicon diode has a forward current of 8.2 mA and a bulk resistance of 12 Ω . What is the actual value of V_F for the device.
- 15) What is the minimum peak reverse voltage for the diode shown .

