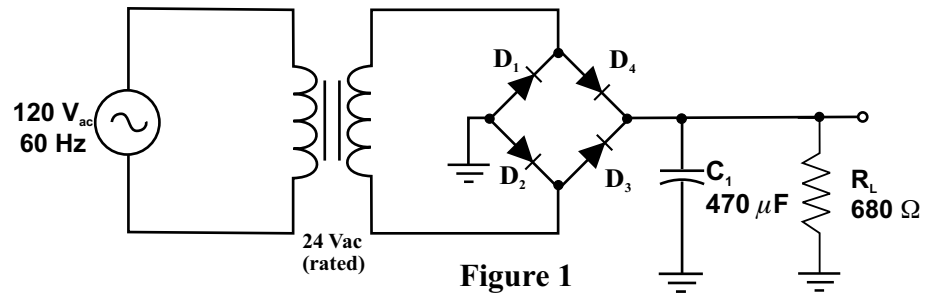


Tutorial 9 Power Supplies

Name _____ Student # _____ Section _____

1) What are the values of V_{dc} and V_r for the circuit shown in Figure 1.

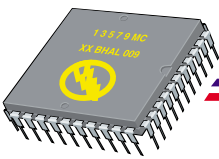


2) In Figure 1 above, the capacitance is changed to $47 \mu\text{F}$. Find the new values of V_r and V_{dc} .

3) In Figure 1 above, I_L increases.

a) What is the effect on V_r . Support your answer.

b) What is the effect on V_{dc} . Support your answer.



4) Determine the average dc load voltage and current values for Figure 2.

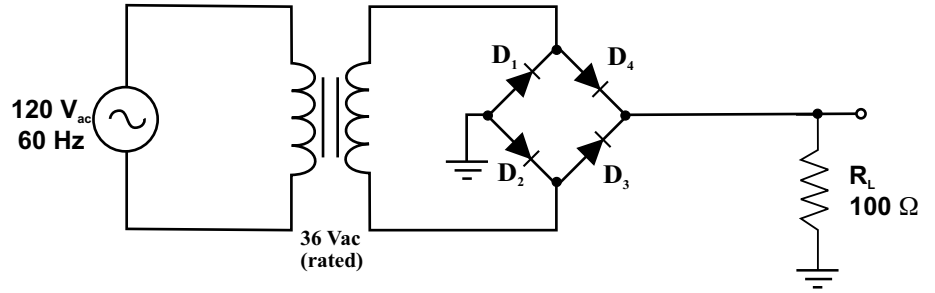


Figure 2

5) In Figure 2 above, if diode D₂ goes short. What effect will this on the secondary voltage.

6) In Figure 2 above, if diode D₂ goes open, calculate the resulting average dc output voltage (V_{dc})

7) For the regulator circuit shown, in Fig. 3 Find the following:

- a) The total current through R_s (I_T)
- b) The load current I_L
- c) The zener current I_Z
- d) The maximum load current I_{L(max)}
- e) The minimum allowable R_L for the circuit R_{L(min)}

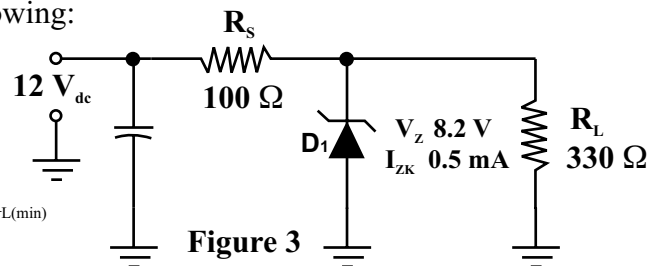
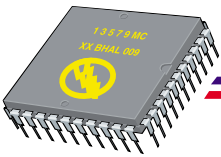


Figure 3

Answers

I _T	_____
I _L	_____
I _Z	_____
I _{L(max)}	_____
R _{L(min)}	_____



Tutorial 9 Power Supplies

8) The circuit to the right is the same circuit as shown in question 7 *except that now the zener diode is installed the wrong way.*

- ① a) What will be the approximate voltage across R_L

- ① b) What will be the total current through R_s now.

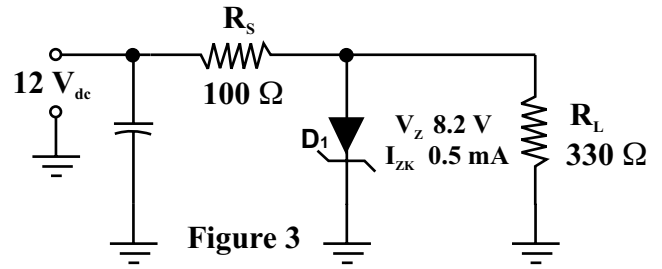


Figure 3

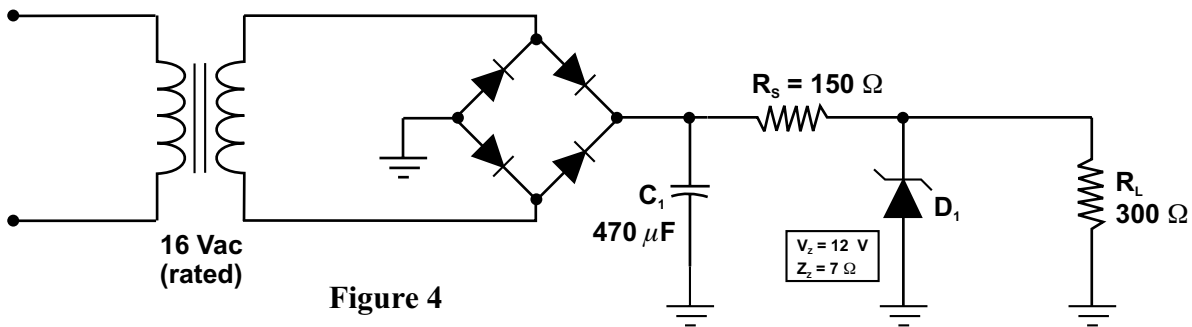


Figure 4

9) For the circuit above, determine the following:
Insert these values in the spaces provided.

- a) The peak value of the secondary voltage ($V_{S(pk)}$)
- b) The peak value of voltage at the rectifier output (V_S)
- c) The total current through the series resistor I_R
- d) The value of ripple voltage for the filter (V_r)
- e) the dc voltage across the load. (V_{dc})
- f) The final ripple voltage across the load ($V_{r(out)}$)
- g) The load current (I_L)

$V_{S(pk)}$	_____
V_S	_____
I_R	_____
V_r	_____
V_{dc}	_____
$V_{r(out)}$	_____
I_L	_____