Electronic Circuits – Assignment 03

Diode Applications II

#	Student ID	Student Name	Grade (10)
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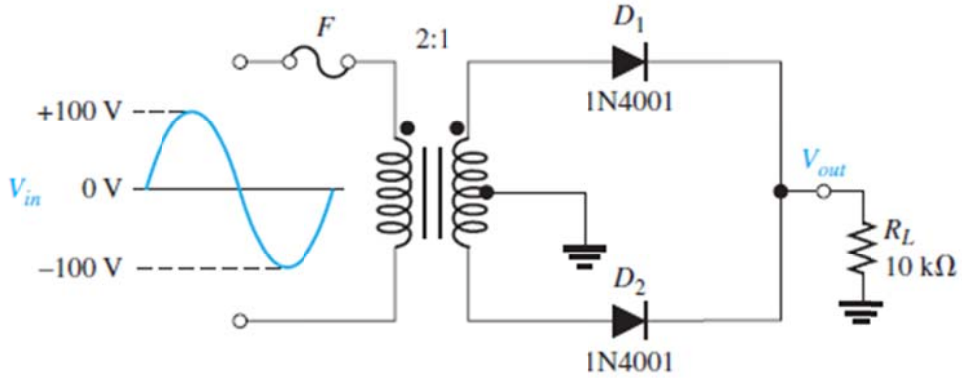
Delivery Date	

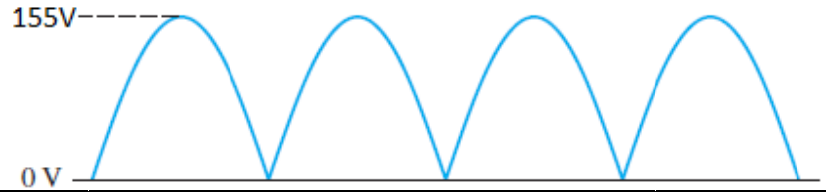
1. يتم تسليم التمرين محلولا في خلال أسبوع من تاريخ التمرين، و يتم حذف درجتين من التمرين عن كل أسبوع تأخير
2. يتم التسليم لمعيد المقرر مباشرة
3. تتم أجابه التمرين في نفس ورق الأسئلة

T & False questions

#	Question	Answer
1	The output frequency of a full-wave rectifier is twice the input frequency.	
2	If the PIV rating of the diodes in Figure 2–36 is increased, the current through *RL* will  **(a)** increase **(b)** decrease **(c)** not change	
3	To forward-bias a diode, **(a)** an external voltage is applied that is positive at the anode and negative at the cathode **(b)** an external voltage is applied that is negative at the anode and positive at the cathode **(c)** an external voltage is applied that is positive at the *p* region and negative at the *n* region **(d)** answers (a) and (c)	
4	Although current is blocked in reverse bias, **(a)** there is some current due to majority carriers **(b)** there is a very small current due to minority carriers **(c)** there is an avalanche current	
5	When forward-biased, a diode **(a)** blocks current **(b)** conducts current **(c)** has a high resistance **(d)** drops a large voltage	
6	The dynamic resistance can be important when a diode is **(a)** reverse-biased **(b)** forward-biased **(c)** in reverse breakdown **(d)** unbiased	
7	Ideally, a diode can be represented by a **(a)** voltage source **(b)** resistance **(c)** switch **(d)** all of these	
8	In the complete diode model, **(a)** the barrier potential is taken into account **(b)** the forward dynamic resistance is taken into account **(c)** the reverse resistance is taken into account **(d)** all of these	

9	When a 60 Hz sinusoidal voltage is applied to the input of a half-wave rectifier, the output frequency is **(a)** 120 Hz **(b)** 30 Hz **(c)** 60 Hz **(d)** 0 Hz	
10	For the circuit in Question 15, the diode must be able to withstand a reverse voltage of **(a)** 10 V **(b)** 5 V **(c)** 20 V **(d)** 3.18 V	
11	When a 60 Hz sinusoidal voltage is applied to the input of a full-wave rectifier, the output frequency is **(a)** 120 Hz **(b)** 60 Hz **(c)** 240 Hz **(d)** 0 Hz	
12	When the peak output voltage is 100 V, the PIV for each diode in a center-tapped full-wave rectifier is (neglecting the diode drop) **(a)** 100 V **(b)** 200 V **(c)** 141 V **(d)** 50 V	

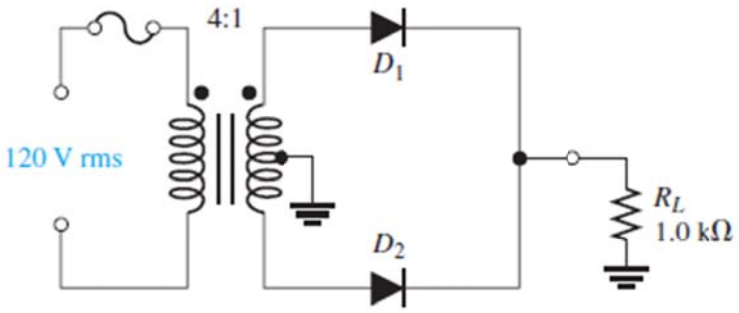
Problems

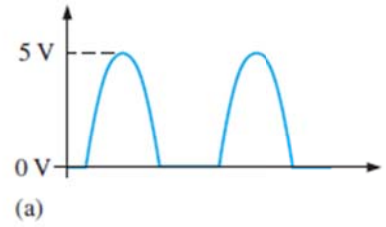
Problem 1	Find the average value of the full-wave rectified voltage if its peak is 155 V. 
Answer 1	.....

Q2	Explain why a series resistor is necessary when a diode is forward-biased.
Sol 2	.....

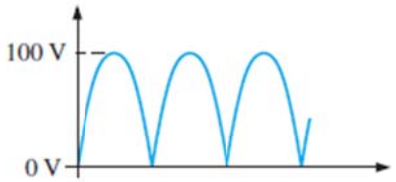
Q3	What would cause the barrier potential of a silicon diode to decrease from 0.7 V to 0.6 V?
Sol 3	.....

Q4	Consider the circuit in Figure. **(a)** What type of circuit is this? **(b)** What is the total peak secondary voltage? **(c)** Find the peak voltage across each half of the secondary. **(d)** Sketch the voltage waveform across *RL.* **(e)** What is the peak current through each diode? **(f)** What is the PIV for each diode?
Sol 4	…… …… …… …… ……

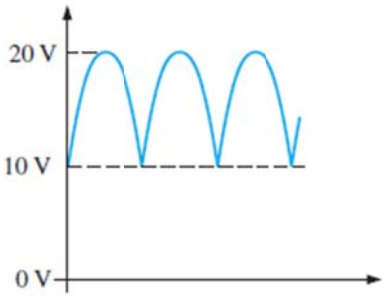




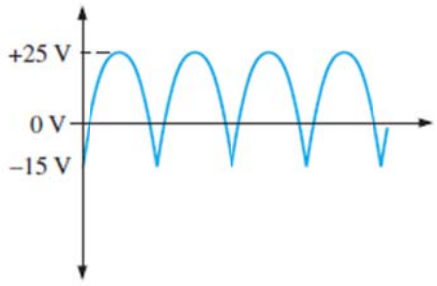
(a)



(b)



(c)



(d)

Q5	Show how to connect the diodes in a center-tapped rectifier in order to produce a negative-going full-wave voltage across the load resistor
Sol 5	.....