

**King Fahd University of Petroleum and Minerals**  
**Electrical Engineering Department**

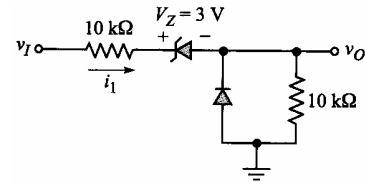
**EE203 Electronics I**  
**Exam # 1**

Name:	I.D#:	No.:	Sec.#04
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**Question No.1 [30/100]**

For the circuit shown in Fig. 1, find the output voltage ( $v_o$ ) for the following two cases:

- (a)  $v_I = 5V$
- (b)  $v_I = -5V$

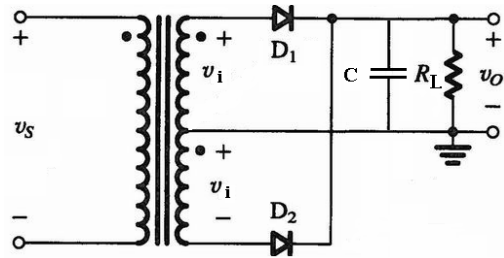


**Fig.1**

**Question No. 2 [30/100]**

For the full-wave rectifier shown in Fig. 2,  $v_i = 15 \sin(2\pi 60t)$  and assume that the diode needs 0.7V to conduct. If  $R_L = 1k\Omega$ .

- (a) Design the capacitor C such that the ripple amplitude will be less than 0.1V. What is the average DC output?
- (b) Suggest a circuit to reduce the ripple without increasing capacitor C. Draw the complete circuit. What will be the new value of ripple in terms of your circuit components?



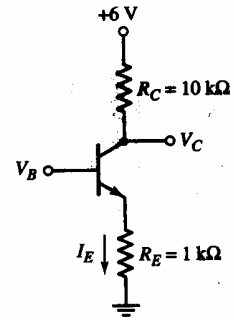
**Fig. 2**

**Question No. 3 [40/100]**

Consider the circuits shown in Fig. 3. Assume that the BJT has  $\beta = 200$ .

Determine  $I_E$  and  $V_C$  for: (a)  $V_B=0$ ,

(b)  $V_B=1V$  (Assume active mode)



**Fig. 3**