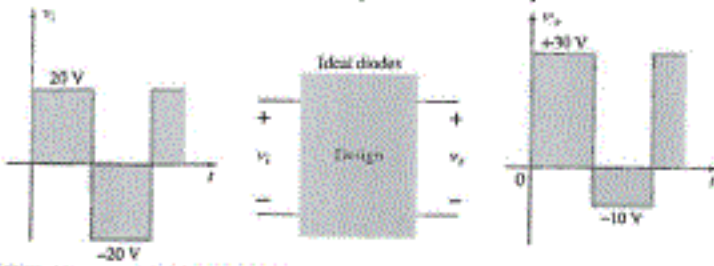
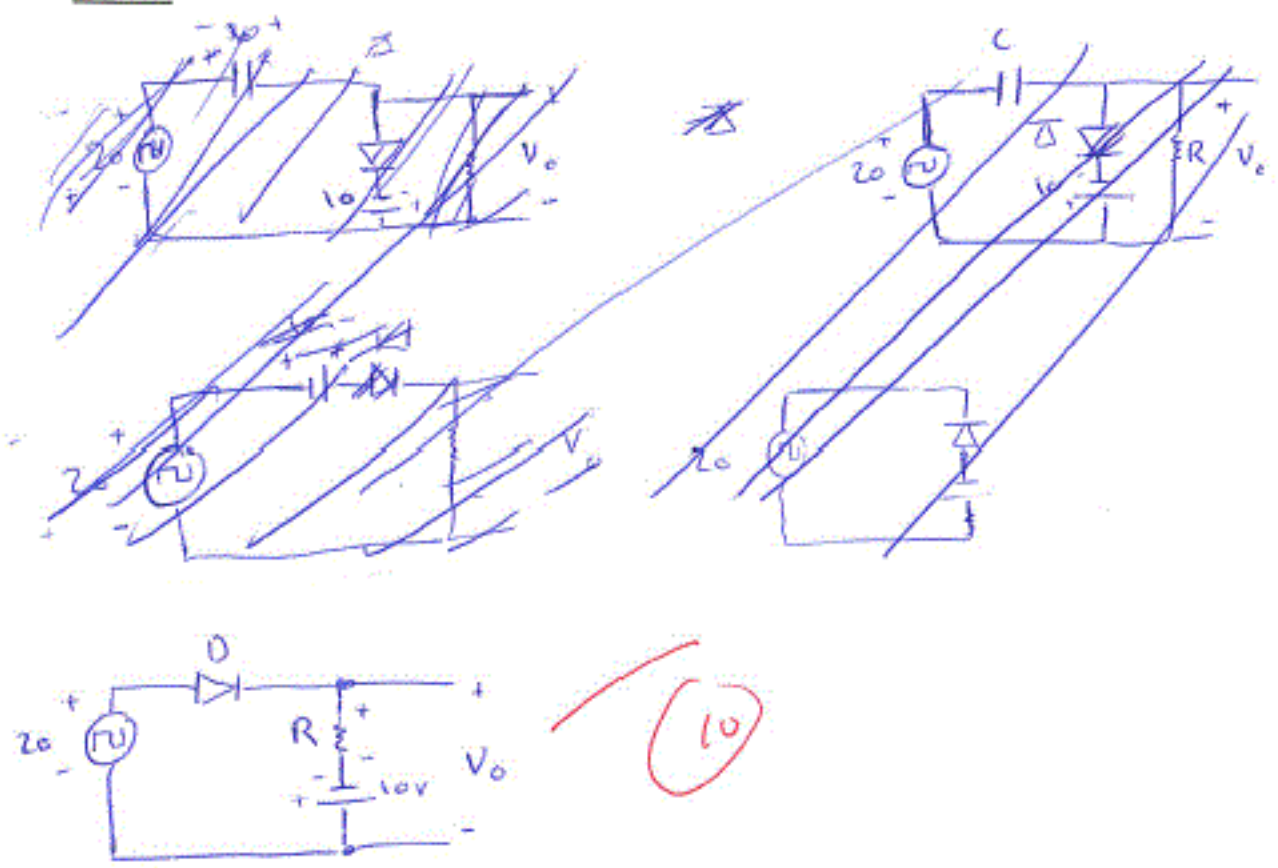


**Question 3 (10 points)**

Construct a diode network that produce the output as shown below

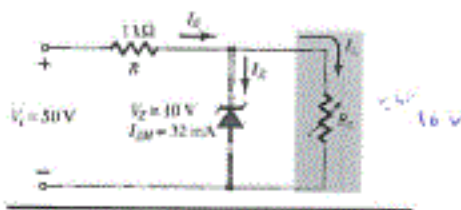


**Solution**



Student ID #: XXXXXXXXXX

Q.2. For the network below, find the Range of  $R_L$  and  $I_L$  will that will maintain the  $V_{RL}$  at 10V



~~$R_L$~~

$$V_L = \frac{R_L V_i}{R} \Rightarrow 10 = \frac{R_L 50}{R_L + 10k} \Rightarrow 10R_L + 10k = 50R_L$$

$$10k = 50R_L - 10R_L$$

$$10k = 40R_L$$

4

$$R_E = 10k = 40R_L \quad R_L = 250\Omega \quad \text{min}$$

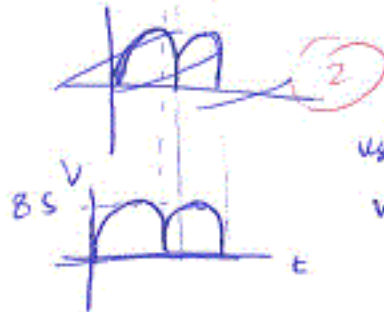
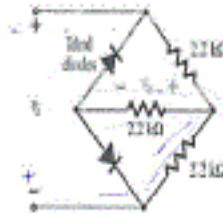
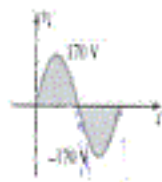
$$R_{max} = \frac{10}{32\mu} = 312.5\Omega$$

$$250\Omega < R_L < 312.5\Omega$$

$$I_L = \frac{10}{250} = 40\mu A$$

Student ID #: XXXXXXXXXX

Q1. For the full Wave Rectifier below sketch the output wave form and determine dc voltage at output



using voltage divider

$$V_o = \frac{(170)(2.2k)}{(2.2+2.2)k} = 85V$$

for half wave

$$V_{dc} (V_p) (0.354) = (85)(0.354) = 30.09V$$



EE 212 - ELECTRONICS I

Fall Semester 2017

Midterm Exam 1

Exam Date: November 09, 2017; Exam Duration: 70 minutes

Student's Full Name: \_\_\_\_\_

Student ID #: \_\_\_\_\_

Section #: 1050 Signature: \_\_\_\_\_

Instructions:

- Write your student ID number on the top of each page
- Write the solution in the space provided under each question
- Show all the details of your analysis and calculations

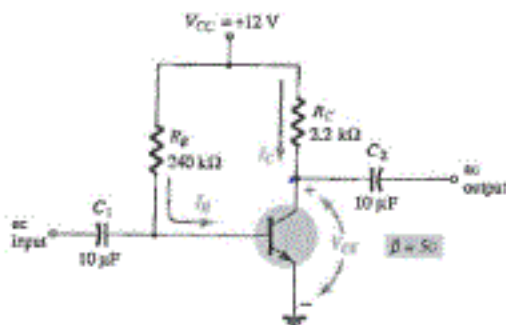
Question No.	Points Assigned	Points Awarded
1. [CO_3, PI_5_51, SO_5]	10	2
2. [CO_4, PI_1_74, SO_1]	10	4
3. [CO_2, PI_5_50, SO_5]	10	10
4. [CO_5, PI_5_49, SO_5]	10	10
Total	40	26

Instructor's Full Name	Abdul Waheed Malik
Signature	

**Question 4 (10)**

For the BJT Transistor below, calculate the following parameters.

- $I_B$  and  $I_C$
- $V_{CEQ}$
- $V_B$  and  $V_C$



$$I_B = \frac{12 - 0.7}{240 \text{ k}} = 47.08 \mu\text{A}$$

$$\beta = \frac{I_C}{I_B}$$

$$I_C = \beta I_B \Rightarrow (50)(47.08 \mu\text{A}) = 2.35 \text{ mA}$$

$$V_{CE} = V_C \quad \text{because no resistor in } e$$

$$V_{CE} = 12 - (2.2 \text{ k} \times 2.35 \text{ mA}) = 6.83 \text{ V}$$

$$V_B = 0.7 \text{ V}$$