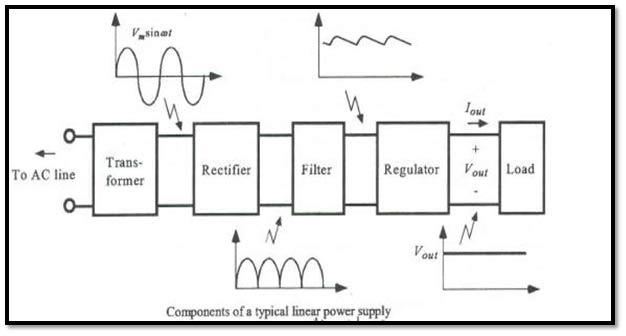
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| **Benha University**  **Faculty of Engineering at Shoubra**  **Energy Engineering Dep.** | Benha Logo | **Mid Term Exam (Fall 2018)**  **Date: Monday (19/3/2018)**  **Subject: Electronic Engineering**  **Duration: 1 hour** |
| * **Answer all the following questions** | | * **No. of questions : 2** * **Total Mark: 30 Marks** |

***Question (1) (15 Marks)***

1. Give one application for: (**Diode, Zener diode**, **LED**) **(3 marks)**

**Diode** : in rectifier circuits **Zener** : regulator in power supply **LED**: indicator

1. The ideal diode acts as short circuit in forward connection and acts as open circuit for reverse. **(2 marks)**
2. Practical diode acts as battery in forward connection and acts as open circuit For reverse.  **(2 marks)**
3. Silicon diode needs 0.7V to operate while Germanium diode require 0.3V to operate.  **(2 marks)**
4. What diode is similar to zener diode when it connected in forward? **Si diode (1 marks)**
5. Zener diode **5V**, mean that it is battery of **0.7V** In forward and battery of **5.1V** In reverse.  **(2 marks)**
6. Sketch the block diagram of a **5**v ***power supply*** and show the waveform after each block.  **(3 marks)**



***Question (2) (15 Marks)***

1. Determine and sketch the peak value of the output voltage and PIV for the circuit in Fig. 1.



Vsec=0.5Vprim=60Vrms

Vsec(p)=1.414\*60=84.84V

Vout=84.84-0.7= 84.14 V

PIV = 84.84V

1. A zener diode used as a regulator at **6.2V**, connected in shunt regulation with unknown **RL**. If the DC input was **5V** and the **Rs**= **10 Ω**, calculate the value of the **RL** that makes the power dissipated through the **Rs** be ***1W***. **(6 marks)**

Solution:

Is= P/(Rs)2=0.01A

VIN <Vz

So zener is off (open circuit)

So Is = IL = 0.01A

RL+RL = VIN / (Is) = 5/0.01=500

RL=500-10=490 **Ω**

1. Calculate the current through 48 Ω in the circuit shown in the Figure (2). Assume all diodes to be ideal.

Solution:

D1, D3 on & short circuit

D2 , D4 off & open circuit

So I = 10 / 48 = 0.208A

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|  |  |
| Fig. 1 | Fig. 2 |

***Good Luck,***

***Prof. Dr. Hala M. Abdelkader***

***Dr. Moataz Elsherbini***