اولى كهربا ٤٦

Kaferelsheikh University
Faculty of Engineering
Electrical Engineering Dept.
Final Exam, 2016-2017
Date:2/1/2017

Subject: Electronic
Time : 90 minuets
Full Mark: 45 degree
Year: First
Exam in2page

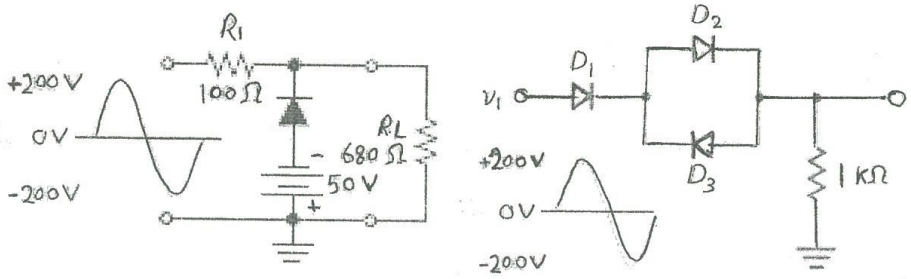
[1] Question One: (25 Mark)

A) Distinguish between majority and minority carriers in a semiconductor. Define mobility of charge carriers.

B) Discuss how a depletion layer is formed in a P-N diode and how does it vary with biasing ? Draw V-I characteristics of P-N junction diode.

C) Derive an expression for the conductivity of a semiconductor.

D) Determine v_o (R_L voltage)for each network of shown below for the input shown.



E) source injects charge carriers into semiconductor bar. explain how current flow, what is this current?

[2] Question Two: (10 Mark)

A) sketch diagram of dc power supply (with reference to the function of each component within the diagram).

B) explain, full wave rectification using two diode? what is the difference between this method and using bridge?

C) compare between dynamic resistance and static resistance.

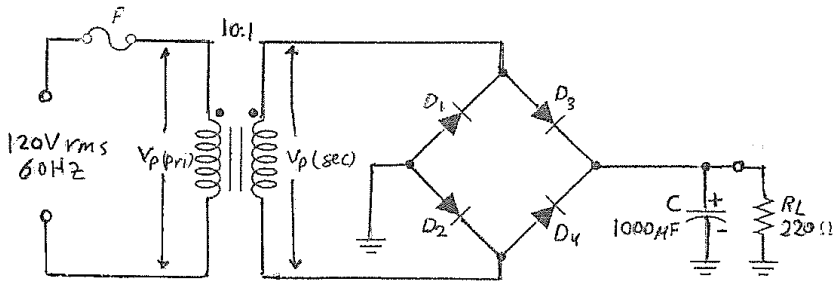
تابع باقى الاسئله فى خلف الورقه

with best wishes

Dr. noha abd al salam

D) Find the resistivity of (a) intrinsic silicon and (b) n type silicon with $N_A = 10^{16}/cm^3$. Use $n_i = 1.5 \times 10^{10}/cm^3$, and assume that for intrinsic silicon $\mu_n = 1350\ cm^2/V\text{-}s$ and for , $\mu_p = 480\ cm^2/V\text{-}s$ and for the doped silicon, $\mu_n = 1110\ cm^2/V\text{-}s$ and , $\mu_p = 400\ cm^2/V\text{-}s$.

E) Determine the peak output voltage , what PIV rating is required for the diodes and the ripple factor for the filtered bridge rectifier with a load as indicated in Figure



All diodes are 1N4001.

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with best wishes

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