School of Electronics Engineering
KIIT UNIVERSITY
BASIC ELECTRONICS (EC-1001)
MID-SEMESTER EXAMINATION

Full Marks: 30 **Time: 90 minutes**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as Practicable and of all parts of a question at one place only.
Answer any* FIVE *question including question No.1 which is compulsory.

1. **[2×5]**

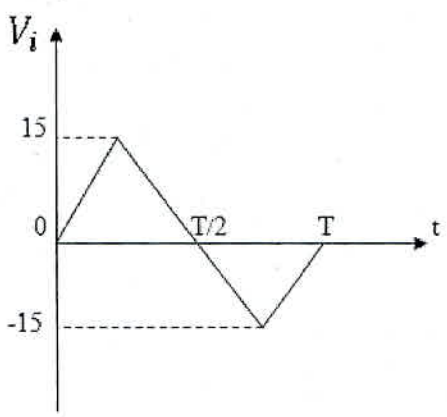
(a)In an extrinsic semiconductor concentration of holes is $5.2x10^{10}cm^{-3}$.Calculate concentration of electrons .Intrinsic concentration=$2.3x10^{13}cm^{-3}$at 300K.
(b)Write down the diode current equation and define each variable.
(c)What is the effect of temperature on the conductivity of semiconductor and conductor?
(d)Write down two difference and two similarity between center tap and full wave bridge rectifier
(e) Differentiate between zener diode and rectifying diode.

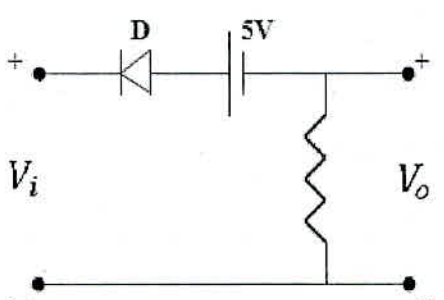
2.

a) Classify the materials on the basis of energy band diagram with proper description. **[3]**
b) Explain Drift and Diffusion current with proper diagram. **[2]**

3.

a) Draw and explain the output waveform for the circuit shown below. (Assume diode D is ideal diode). **[3]**

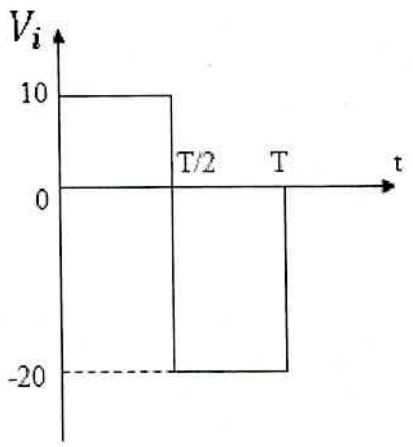


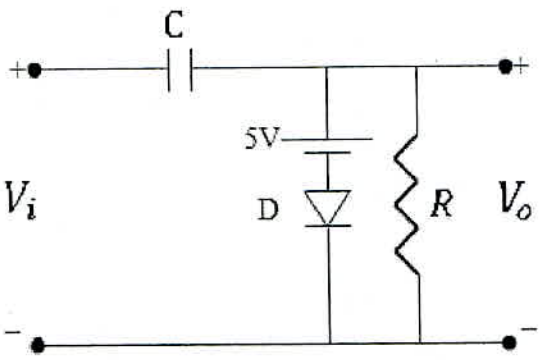


b) What do you mean by depletion layer in junction diode and write down the effect of biasing on it ? **[2]**

4.

a) Draw and explain the output waveform for the circuit shown below. (Assume diode D is ideal diode). [3]





b) Differentiate between LED and Photodiode. [2]

5.

a) With proper diagram explain the operation of bridge full wave rectifier. Also find its efficiency and ripple factor. [3]

b) What do you mean by equivalent circuit. Briefly explain the diode equivalent circuit. [2]

6.

a) Explain the operation of Zener diode as a voltage regulator. [3]

b) Define the static and dynamic resistance of p-n diode. [2]

7. A center tap full wave rectifier uses two diodes with an equivalent forward resistance 50Ω. If the input ac Voltage is 50 sin (200πt) and the load resistance of 950 Ω. [5]

Determine:

(i) Peak,avg.and rms value of current

(ii) Efficiency

(iii) Ripple factor of the rectifier.

**********ALL THE BEST**********