(b) Explain the concept of current-shunt feedback amplifier by help of suitable diagram & Chnac Graf. [8]

OR

Q.4 (a) Explain feedback amplifiers with its classification & concept. [8]

(b) An amplifier with an open loop voltage gain of 1,000 delivers 10 W of output power at 10% second harmonic distortion when the input single in 10mV. If 40dB'-ve' voltage series feedback is applied and the output power is to remain at 10W. Determine - [8]

(i) The required input single

(ii) percentage second harmonic distortion

(iii) close loop & voltage gain

UNIT-V

Q.5 (a) Explain Design of Mono-stable multi-vibrators. [8]

(b) Explain a wien bridge oscillator with its diagram and applications. [8]

OR

Q.5 (a) Draw and explain Schmitt trigger. [8]

(b) Explain an oscillator, its classification & criterion. [8]

3E1651

Roll No. _____ Total No of Pages: 4

3E1651

B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Computer Science & Engineering
3CS1A Electronic Devices & Circuits
CS, IT

Time: 3 Hours **Maximum Marks: 80**
Min. Passing Marks: 26

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT-I

Q.1 (a) Explain the concept of charge densities in a semiconductor. Also explain Fermi Dirac distribution. [10]

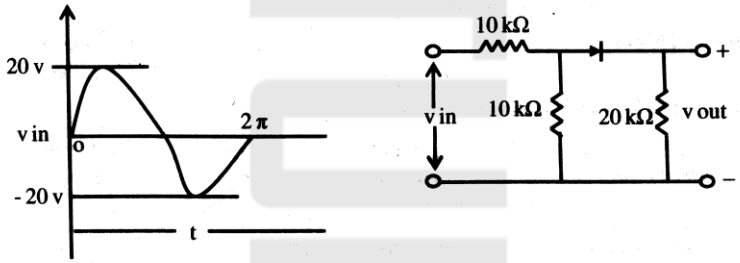
(b) Find the conductivity of n-type Ge at room temp, assuming one donor atom in each 10^8 atoms. The density of Ge is 5.32×10^3 Kg/m^3 and the atomic weight is 72.6 Kg/K-mol. Comment on the result.

[e = $1.6 * 10^{-19}$ C, $\mu_e = 0.38$ m^2/v-s, $\mu_n = 0.18$m^2 /v-s] [6]

OR

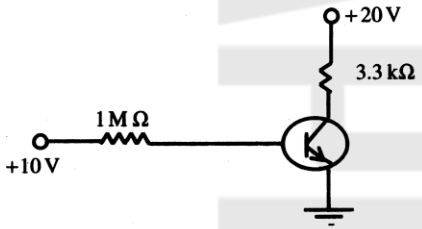
Q.1 (a) Describe in detail the concept of Mass action law & Hall effect in detail, [10]

(b) Sketch the output voltage waveform for the circuit shown below. Assume the diode ideal. [6]



UNIT-II

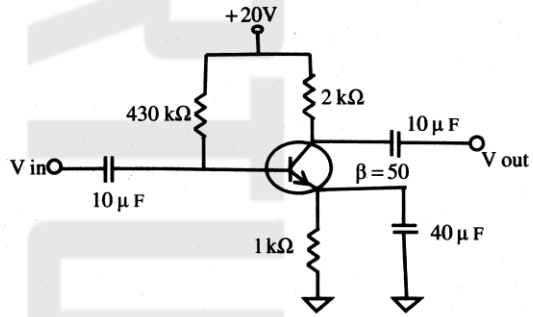
Q.2 (a) Draw the load line for the following fig (given below). What is Ic at saturation point? Find $V_{c\epsilon}$ at cut off point. [6]



(b) Explain DC & AC analysis of Cϵ & CB amplifiers. [10]

OR

Q.2 (a) For the Emitter bias network given below, determine I_B, I_C, $V_{C\epsilon}$, V_ϵ, V_B & V_C [8]



(b) Explain the working concept of Ebers-Moll model. [8]

UNIT-III

Q.3 (a) Explain the phenomena of Fϵ T as voltage variable resistor. [8]

(b) Describe in detail the concept of equivalent circuits & biasing of MOSFET's. [8]

OR

Q.3 (a) Explain Miller's Theorem for Semiconductors amplifiers. [8]

(b) Explain the phenomena of Cascading Transistor amplifiers. [8]

UNIT-IV

Q.4 (a) An amplifier with a gain of 60 dB has an output impedance of 10 kΩ. It is required to modify its output impedance to 1 kΩ. What type of feedback has to be applied? Calculate the feedback factor. Also find the percentage change in the overall gain, for a 10% change in the open loop gain of the amplifier. [8]