Mahavir Education Trust's

SHAH & ANCHOR KUTCHHI ENGINEERING COLLEGE

Chembur, Mumbai -88.

INTERNAL ASSESMENT EXAM

SUBJECT :-APPLIED PHYSICS- I **MAX MARKS:20**

Time : 1hr.

Date : 28-10-2015

Q.1. Attempt any FIVE of the following questions.(2x5=10 M)

a) Disinguish between Paramagnetic and ferromagnetic magnetic materials.

b) Explain what is meant by polarisation in dielectrics.

c) Find the resistivity of intrinsic G_e at 300^0 C. The density of carriers is 2.5×10^{19} m^{-3} mobility of electrons and holes are μ_e=0.39 m^2/volt.sec and μ_h=0.19 m^2/volt.sec.

d) What is the probability of an electron being thermally excited to the conduction band in silicon at 20^0C. The band gap energy is 1.12eV.

e) Explain Sabines formula

f) Write a note Non destructive testing (NDT).

Q.2.A) Explain Hall effect. What is its significance. Give its applications. Obtain an expression for Hall coefficient.(5M)

OR

Q.2.B) Show that the intrinsic Fermi level lies in the middle of the bandgap. (5M)

Q.3. A) Consider an air coil toroid with 500 turns and area of cross section $6cm^2$ with a mean radius of 15cm and a coil current of 4A.Calculate:-
1) MMF 2) Reluctance (R) 3) Magnetic flux(Ø) 4) Magnetic flux density(B)
5) Magnetic field intensity(H)..(5M)

OR

Q.3. B) . Find the natural frequency of vibration for a quartz plate of thickness 2mm. Given Young's modulus is 8×10^{10} N/m^2 and density is 2650 kg/m^3. Calculate the change in thickness required if the same plate is to be used to produce ultrasonic waves of frequency 3MHz..(5M).