



## TERM TEST – II

### APPLIED PHYSICS- II

Branch : F.E. All

Date : 15/04/2015

Year/Sem : F.E-II

Time : 9.45 pm to 10.45 pm

Note: Q.1 is compulsory.

Marks : 15

- Q.1 (a) What is the function of control grid in CRT (1)
- (b) Write a short note on Carbon Nanotubes (CNTs) (2)
- (c) The critical field of Niobium is  $1 \times 10^5$  A/m at  $8^0$  K and  $2 \times 10^5$  A/m at  $0^0$  K . Calculate critical temperature of the element. (2)

- Q.2 a) Explain principal, construction and working of He-Ne Laser. (5)

OR

- b) An electron travels with a velocity of  $2.5 \times 10^6$  m/sec in vacuum in a uniform magnetic field strength of  $0.94 \times 10^{-4}$  wb/m<sup>2</sup> , such that velocity vector makes an angle of  $30^0$  with the field direction. Determine the radius of revolution of electron path and the distance covered along the magnetic induction lines in five such revolutions. (5)

- Q.3 a) Differentiate between Type-I and Type-II Superconductors. (5)

OR

- b) Prove that electron does not exist inside the nucleus using Heisenberg's Uncertainty Principle. (5)