Cat. No:  Basc 1103

Title:  Engineering Physics

Marks: 80

Time : 3 hours

Engineering Physics (- -)

### I. Answer all questions (10x1=10 Marks)

1. Define interference of light.
2. State Curie Wess law.
3. Write expression for wavelength in the Newton's rings experiment.
4. Distinguish between spontaneous and stimulated emission.
5. What do you mean by Meissner effect?

**State True or False**

6. LASER is monochromatic.
7. Paramagnetic material shows magnetic moment aliened parallel to the applied field.

**Fill up the blanks**

8. Splitting of spectral lines in the presence of electric field is called.................
9. The tangential force acting on the surface of a liquid is known as ...............
10. ................is the process of increasing number of atoms in the higher energy state.

### II. Answer any ten questions (10x3=30 Marks)

1. Explain the construction of diffraction grating.
2. Write a note on Diamagnetism, Para magnetism and Ferromagnetism.
3. Briefly describe any three applications of laser.
4. Explain the principle of Hologram with a neat diagram.
5. Compare interference and diffraction patterns.
6. Calculate the refractive indices of core and cladding of a fibre if NA=2.2 and $\Delta$=.012
7. Briefly explain Zeeman effect and Stark effect.
8. What are the properties of super conductors?
9. Draw experimental setup for the Newton's rings experiment.
10. Write a short note on optical pumping and optical cavity.
11. Describe stream line and turbulent flow in fluid flow.
12. State and explain Raman effect.

III    Answer any six questions (6x5=30 Marks)

1. Explain metals, insulators and semi conductors on the basis of band theory of solids with energy level diagram.
2. Describe He-Ne laser with a neat diagram .
3. Discuss optical fibre communication system with the help of a block diagrame.What are the transmission losses in OFC system?
4. Explain the effect of entropy and specific heat capacity on superconductors.
5. A plane transmission grating has 6000 lines/cm.Find the angle of separation of the 5048 A° and 5016 A° lines of Helium in the third order.
6. Explain SQIUD and its applications.
7. Derive expression for resolving and dispersive power of a grating.
8. Explain law of mass action.

IV    Answer any one question (1x10=10 marks)

1. Discuss with necessary theory, the formation of Newton's rings and hence explain how the refractive index of a liquid can be determined.
2. Explain the three basic atomic transmissions and thus establish a relation connecting Einstein's coefficients. Discuss the construction and working of Ruby laser with the help of neat diagrams.