END SEMESTER EXAMINATION
(AS106) APPLIED SCIENCE – II

Programme: F. Y. B. Tech.
Time : 3 Hours

Max. Marks: 60
Date: 15April2006

Instructions:- 1) Solve all questions.
2) Figures to the right indicate full marks
3) Draw neat diagram wherever necessary.
4) Assume suitable data if necessary.

SECTION- I

Q. NO. 1 Attempt any **FIVE** **(10)**

a) Why are Newton's rings crowed as one goes away from the centre?

b) How optical flatness is tested?

c) Antireflection coating $\mu = 1.3$ is deposited on a glass lens. Calculate the thickness of the coating for $\lambda = 6000$A.U.

d) The resolving power of grating having N slits in the n^{th} order will be how Much.

e) The refractive index for plastic is 1.25. Calculate the angle of refraction for ray of light inclined at polarizing angle.

f) Differentiate between half wave plate and quarter wave plate

g) How can wavelength of light can be determined using plane transmission grating?

Q. NO. 2 a) Explain the operation of solid state ruby laser with the neat labeled diagram. **(5)**

OR

b) i) What is Holography? Explain the process of holography recording. **(3)**

ii) Why can visible light not be used to produce hologram of laser size. **(2)**

c) i) State the advantages of communication through fiber optics . **(3)**

ii) The numerical aperture in certain fiber is 0.48. What is the acceptance angle of it? **(2)**

Q. NO. 3 a) what are ferrites? How they are produced? **(4)**

b) What is Raman Effect? Explain the experimental arrangement for studying Raman Effect. **(4)**

c) Prove that $x^2 + y^2 + z^2 = c^2t^2$ is invariant under Lorentz transformation. **(2)**

OR

c) Deduce the fractional increase of mass of a particle for velocity 0.1c. **(2)**

Section – II

Q.4 (a) Explain Nitrogen Cycle.

OR

What are the major constituents of atmosphere? (4M)

(b) Discuss effects of human activities on environment.

OR

Which are renewable energy sources?
Explain any two energy sources. (4M)

(c) Explain:
1.Pathways of a pollutant.
2.Threshold limit value. (2M)

(a) Case study on : Ganga River Water Pollution. (4M)

OR

Q.5 (a) How to control emission of NOx and SOx ? (4M)

(b) Explain control of particulate emission by cyclone collector and wet scrubber. (4M)

(c) Give classification of Air Pollutants. (2M)

Q.6 (a) Explain industrial waste water treatment. (4M)

(b) Explain Any Two : (4M)

1. **Alkalinity of water.**
2. **Types of hardness.**
3. **Determination of chlorides in water.**
4. **Determination of dissolved oxygen in water.**

(c)Discuss briefly various effects of noise on human body. (2M)
