

B. Tech Degree VI Semester Examination in Instrumentation, April 2008

IN 603 OPTOELECTRONIC INSTRUMENTATION

(New scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A

*(Answer any **FIVE** questions)*

*(All questions carry **EQUAL** marks)*

(5 x 5 = 25)

- I. (a) State the fundamental conditions for the production of interference fringes.
(b) Explain how does an LED work.
(c) What is specific rotatory power?
(d) Briefly explain 'Numerical Aperture'.
(e) What is meant by 'Splicing'? How is it achieved?
(f) What is electro optic effect? How does a Kerr modulator work?
(g) What are the different techniques for achieving population inversion in a laser?
(h) Explain briefly the working of a pressure sensor.

PART - B

(5 x 15 = 75)

- II. What are interference filters? Explain the working of an optical spectrum analyzer.

OR

- III. Describe Michelson interferometer and explain the formation of fringes in it. How will you find the wave length of monochromatic light with its help?

- IV. What do you understand by double refraction? Explain Huygen's theory of double refraction in a uniaxial crystal.

OR

- V. Explain what is Electro luminescence. How does an electro luminescent display device work? What is plasma display?

- VI. Describe in detail the working of a heterojunction semiconductor laser. What are its uses?

OR

- VII. Explain what is Q-switching. Describe the different techniques for achieving Q-switching.

- VIII. Explain how one can construct and reconstruct 3 dimensional images. Explain how double exposure and real time holography can be used in industrial applications.

OR

- IX. Distinguish between longitudinal and transverse modes in a laser cavity. Explain with neat diagrams the working of a He – Ne laser.

- X. Briefly describe the guiding of light in optical fibres. Explain why pulse dispersion occur in fiber optic communications.

OR

- XI. What are the different fabrication techniques for drawing optical fibres? Explain the working of temperature and displacement sensors.