

(Following Paper ID and Roll No. to be filled in your
Answer Books)

Paper ID : 122666

Roll No.

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B.TECH

Theory Examination (Semester-VI) 2015-16

OPTO ELECTRONICS

Time : 3 Hours

Max. Marks : 100

Section-A

- 1. Attempt all parts. All parts carry equal marks. Write answer of each part in sort. (2×10 = 20)**
- (a) What do you understand by wave-particle duality of light?
- (b) What is meant by stokes shift?
- (c) Estimate the energy required to excite electrons from the donor levels to the conduction band in silicon, given the $M_e = 0.26 m$ and the relative permittivity of 11.8.
- (d) What is meant by intrinsic absorption?

- (e) Define internal quantum efficiency of LASER.
- (f) What are the different noises present in the avalanche photodiode?
- (g) What is dark current noise?
- (h) What is Quantum confined Stark effect?
- (i) List the factors that dictate the half wave voltage in an active wave guide device.
- (j) What is meant by electro optic effect?

2. Attempt any five questions from this section.

(10×5 = 50)

- (a) What are the need of the electrodes? Give examples.
- (b) Obtain V-I Characteristics of LED.
- (c) Explain the fundamentals related to LASER.
- (d) Describe the electro-optic amplitude modulation.
- (e) Give the design of optical amplifiers.
- (f) Discuss the PCM transmission technique.

(2)

- (g) Describe about the guided wave Mach-Zehnder interferometer.
- (h) Explain the crystal structure of Ga As.

Section-C

Note : Attempt any two questions in this section. (15×2 = 30)

- 3. Explain the principle, construction and working of an Electron luminescence devices with necessary diagrams.
- 4. (i) Discuss in detail the principle and operation of a photonic switch based on Self electro optic Device (SEED).
(b) Explain the concept of Bipolar Controller Modulator.
- 5. Explain with a neat diagram, the construction of electro optic effect based external modulator. Also deduce the expression of modulated light.

