

Registration No. :

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Total number of printed pages – 2

B. Tech
CPEN 5304 (Old)

Sixth Semester (Back) Examination – 2013
FIBER OPTIC INSTRUMENTATION

BRANCH : AEIE

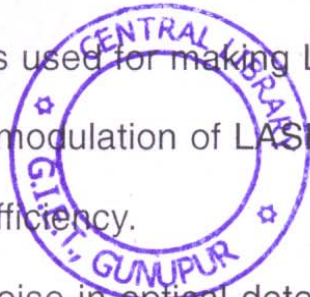
QUESTION CODE : B352

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.
The figures in the right-hand margin indicate marks.*

1. Answer the following questions : 2×10
- Write few properties of LASER.
 - Write few materials used for making LEDs.
 - What is meant by modulation of LASER ?
 - Define Quantum Efficiency.
 - Write sources of noise in optical detectors.
 - What is Polarization of light ?
 - Define Refractive Index of light.
 - Explain Snell's law.
 - What is mean by mono mode fiber ?
 - Write the variables which can be measured using Fiber-Optic Gyroscope.
2. (a) Describe the characteristics and working of LEDs. 5
- (b) Distinguish between spontaneous emission and stimulated emission. What are the characteristics of these emissions ? 5



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3. (a) Describe working of p-n junction photo diodes. 5
(b) Explain principle of operation of APD photo diodes. 5
4. (a) Define Numerical Aperture and describe Ray Propagation in Step-Index Fibers. 5
(b) Describe structure of Graded-Index Fiber and write few advantages as an Optical Wave Guide. 5
5. (a) Describe various Source-to-Fiber Power Launching Schemes. 5
(b) With suitable diagram, explain Lensing Scheme for coupling improvement. 5
6. (a) Explain principle of measurement of Intensity Modulated Sensors. 5
(b) Describe working of Fiber-Optic Mech-Zennder Interferometric Sensors. 5
7. (a) Briefly describe construction and working of semiconductor optical amplifiers. 5
(b) Briefly explain principle of modulation of Intensity by Sources. 5
8. Answer any two of the following : 5×2
(a) LASER modes and Threshold conditions.
(b) Attenuation in optical fiber—Absorption, Scattering and Bending Loss
(c) Distributed fiber optic sensors

