

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 31584

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Elective

Electronics and Instrumentation Engineering

01UEI906 - LASER AND FIBRE OPTICS INSTRUMENTATION

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Give any four desirable properties of lasers.
2. What is Q switching?
3. What are industrial lasers?
4. What are the advantages of laser welding?
5. Write any two applications of holographic interferometry.
6. What is holography?
7. Define Numerical Aperture (NA).
8. What are the various losses in an optical fiber?
9. What is a fiber optic gyroscope?
10. What is the use of fibre optic gyroscope and on what effect it works?

PART - B (5 x 16 = 80 Marks)

11. (a) How is a three level laser different from a four level laser? With suitable energy level diagram, describe the construction and working of a four level laser. (16)

Or

- (b) Explain the construction and operation of semi-conductor LASER. (16)
12. (a) Write notes on LASER heating and welding. (16)
- Or
- (b) Describe with neat sketches the principle of laser welding, melting and trimming of materials. (16)
13. (a) Explain the three scientific applications of Holography. (16)
- Or
- (b) Explain holographic interferometry. Illustrate any two applications of it with relevant diagrams. (16)
14. (a) Explain in detail the various losses in optical fiber. (16)
- Or
- (b) Explain the construction and working of PIN diode and avalanche photo diode. List out their advantages, disadvantage and applications. (16)
15. (a) Explain any three industrial applications of fibers. (16)
- Or
- (b) Explain the measurement of pressure, temperature and change in orientation using optical fibres. (16)
-