

25-04-2023

Reg. No.

Question Paper Code

11808

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Seventh Semester

Electronics and Instrumentation Engineering

(Common to Instrumentation and Control Engineering)

EI8075 - FIBRE OPTICS AND LASER INSTRUMENTATION

(Regulations 2017)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|--|-------------------------------|
| 1. Define the angle of incidence. | 2,K1,CO1 |
| 2. State the difference between Skew rays and Meridional rays. | 2,K1,CO1 |
| 3. List the application of optical fibers. | 2,K1,CO2 |
| 4. What is Pockels effect? | 2,K1,CO2 |
| 5. List the properties of Laser. | 2,K1,CO3 |
| 6. Define Cavity damping. | 2,K1,CO3 |
| 7. State the applications of LIDAR. | 2,K1,CO4 |
| 8. Mention the two modes of laser welding process. | 2,K1,CO4 |
| 9. List the advantages of Laser surgery. | 2,K1,CO5 |
| 10. What are the uses of holography? | 2,K1,CO5 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Describe the different types of fibers and their properties with neat sketches. 13,K2,CO1

OR

- b) Explain the requirements of an ideal optical source and an ideal optical detector. 13,K2,CO1

12. a) Describe the principle of Measurement of pressure and temperature. 13,K2,CO2

OR

- b) Explain the working principle of the Optical time domain reflectometer. 13,K2,CO2

13. a) Describe the construction and working of a gas laser with neat diagram. 13,K2,CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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OR

- b) Explain in detail the Properties of Laser Radiation and explain Cavity damping. *13,K2,CO3*
14. a) Explain the working principle of Laser for the Measurement of Length. *13,K2,CO4*
- OR**
- b) Explain in detail the principle of Laser welding and melting. *13,K2,CO4*
15. a) Explain the basic principle of holography and explain the methods of holographic interferometry. *13,K2,CO5*
- OR**
- b) Explain any two medical applications of laser. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Explain the uses of LASER in the field of medicine and also state the precautions to be considered while using a laser in the field of medicine. *15,K2,CO5*

OR

- b) Explain in detail about Transmission and Mechanical characteristics of optical fiber. *15,K2,CO1*