



(Pages : 3)

K – 5576

Reg. No.

Name :

Eighth Semester B.Tech. Degree Examination, February 2021

13.805.3 : OPTICAL INTEGRATED CIRCUITS (T) (Elective V)

(2013 Scheme)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer all questions

1. Differentiate : Electrical IC and Optical IC.
2. What is planar waveguide?
3. Why do you go for doping in substrate material?
4. Define Dispersion.
5. What is meant by velocity of propagation?
6. Differentiate : Electro-optic and acousto optic modulators.
7. What is an optical Amplifier?
8. Define population inversion in a LASER.
9. What is integrated semiconductor LASER?
10. Why do we need directional coupler?

(10 × 2 = 20 Marks)



P.T.O.

PART – B

Answer **one full** questions from **each** Module. Each question carries **20** marks.

Module – I

- | | | |
|---------|---|----|
| 11. (a) | Elaborate on ray optic approach to optical mode theory. | 10 |
| (b) | Discuss on basic three layer wave guide. | 10 |
| 12. (a) | Elucidate on symmetric and asymmetric waveguides. | 10 |
| (b) | Examine the effectiveness of channel and strip loaded waveguides. | 10 |

Module – II

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|---------|--|----|
| 13. (a) | Critically examine on carrier concentration reduction waveguide. | 10 |
| (b) | Demonstrate the process involved in epitaxial growth. | 10 |
| 14. | Develop a treatise on polymer and fiber integrated optics. | 20 |

Module – III

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|---------|--|----|
| 15. (a) | Why do we need waveguide input and output couplers? Explain. | 7 |
| (b) | Classify types of couplers. | 6 |
| (c) | Describe coupling between waveguides. | 7 |
| 16. (a) | Depict the salient features of waveguide modulator. | 10 |
| (b) | Present the working of single channel electro optic modulator. | 10 |



Module – IV

17. (a) Sketch and highlight the principle of working of monolithic Integrated direct Modulator. 10
- (b) Enumerate on integrated optical detectors. 10
18. Summarise the factors affecting the performance and principle of Micro optical devices in detail. 20

