

B.TECH. DEGREE EXAMINATION, MAY 2014**Eighth Semester**

Branch : Electronics and Communication Engineering

EC 010 803 – LIGHT WAVE COMMUNICATION (EC)

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 4 marks.*

1. What are the various elements of light wave communication system? Explain each element in brief.
2. Differentiate single mode and multimode fibers.
3. What is attenuation? What are the different types of attenuation?
4. Write notes on fiber couplers.
5. Explain the working principle of LED.
6. Explain the terms Responsivity and Quantum Efficiency.
7. Write short note on Semiconductor Optical Amplifiers.
8. What is MZ optical modulator?
9. Give an account of optic link power budget with an example.
10. Write note on wavelength switching networks.

(10 × 4 = 40 marks)

Part B*Answer all questions.**Each full question carries 12 marks.*

11. (a) Explain in detail about ray optics.
(b) Derive an expression for Critical angle, acceptance angle and numerical aperture.

(6 + 6 = 12 marks)

Or

12. (a) Differentiate Step Index and Graded Index fiber.
(b) What is V number? Explain its significance.

(7 + 5 = 12 marks)

Turn over

13. What is dispersion? Bring out the difference between chromatic dispersion and intermodal dispersion with neat sketches.

Or

14. With neat diagram, explain the principle of three optic fiber slicers.
15. Explain the working principle and structure of LASER.

Or

16. (a) Compare the performance of PIN and Avalanche photodiode.
(b) Explain operating principle of photo detection.

(6 + 6 = 12 marks)

17. (a) Explain how light is amplified in optical amplifiers.
(b) Describe fiber amplifiers and its types.

(6 + 6 = 12 marks)

Or

18. With energy band diagrams explain Erbium Doped Fiber Amplifiers.
19. Describe link power budget and maximum link length calculation.

Or

20. Explain Optical Networks. Compare wavelength routing and switching networks.

[5 × 12 = 60 marks]