F 3240 (Pages : 2) Reg. No.....

Name.....

# B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

## Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 803—LIGHT WAVE COMMUNICATION (EC)

(New Scheme—2010 Admission—Supplementary)

Time : Three Hours Maximum : 100 Marks

### Part A

1. What do you mean by SI and GI fibers ?
2. Briefly explain about ray optics.
3. What is Scattering Loss ?
4. What is attenuation ? What are the different type of attenuation ?
5. What is the principle of operation of APD ?
6. Explain the terms Quantum Efficiency and Responsivity.
7. What is the principle of operation of Optical amplifiers ?
8. What is MZ optical modulator ?
9. What do you mean by wavelength switching networks ?
10. Give an account of optic link power budget with an example.

(10 × 4 = 40 marks)

### Part B

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

11. (a) Explain V number.

    (b) Derive an expression for Critical angle, acceptance angle and numerical aperture.

(6 + 6 = 12 marks)

*Or*

12. (a) Differentiate between Single and Multimode fiber.

    (b) Explain Snell's Law and Total Internal Reflection.

(5 + 7 = 12 marks)

**Turn over**

13 (a) Write notes on fiber couplers.

(b) With neat diagram explain optic fiber Slicers.

(5 + 7 = 12 marks)

*Or*

14. What is Dispersion ? Bring out the difference between Chromatic dispersion and Intermodal dispersion with neat sketches. (12 marks)

15. Explain the working principle and structure of LASER. (12 marks)

*Or*

16. Explain the working principle of LED, LED structures and characteristics. (12 marks)

17. Explain in detail about Erbium Doped Fiber Amplifiers.

*Or*

18. (a) Write short notes on Semi-conductor Optical Amplifiers.

(b) Describe fiber amplifiers and its types.

(6 + 6 = 12 marks)

19. Describe link power budget and rise time budget analysis. (12 marks)

*Or*

20. Explain Optical Networks ? Compare wavelength routing and switching networks. (12 marks)

[5 × 12 = 60 marks]