Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (Electrical & Electronics) (2013 & Onwards E-III)/
(Electronics & Electrical) (Sem.–7)

OPTICAL FIBER COMMUNICATION

Subject Code : BTEEE-805C
M.Code : 71971

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. Why do we prefer optical fibre communication for long distance communication?
2. What is the use of splicing?
3. Which dispersion mechanism (material or waveguide) is a function of the size of the fibre's core relative to the wavelength of operation?
4. Differentiate absorption and emission rate.
5. What are the two analyses usually carried out to ensure the desired performance of optical fiber transmission link?
6. In a 50ns pulse 6×10^6 photons at a wavelength of 1200nm fall on an InGaAs photodetector. On average 4.2×10^6 EHPs are generated. Calculate the quantum efficiency of photodetector.
7. Draw the layer diagram of a pin photodiode.
8. Differentiate conventional and dispersion shifted fibers.
9. What are the benefits of optical multiplexing?
10. What is light wave system?

SECTION-B

11. Explain the different modulation format applicable to optical communication system.

12. Discuss single mode and multimode fiber with suitable diagram.

13. Draw the structure of the LED. Calculate efficiency of a LED drawing 80 mA of current when 1.5 V is applied to its terminals and produces 1.5mW of optical power.

14. Explain the construction and working of coupled cavity semiconductor laser.

15. Define the term modal noise and briefly explain the impact of modal noise on fibre communication.

SECTION-C

16. Define Snell law. Discuss the total internal reflection. Draw a diagram indicating how the light propagation is effected by numerical aperture.

17. With the help of suitable diagram explain the working of VCSEL.

18. Write a short notes on :

    a. Fibre losses.

    b. Source fiber coupling.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.