

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech. (ECE) (Sem-6)**  
**OPTICAL FIBERS & COMMUNICATION**

Subject Code : BTEC-602-18

M.Code : 79375

Date of Examination : 12-06-2023

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS 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**

**1. Write briefly :**

- a) What is higher order dispersion?
- b) How a transmitting media is important for a communication system?
- c) What is the basic difference between step indexed and graded indexed Fibers?
- d) Discuss Group velocity dispersion.
- e) What are Absorption losses?
- f) What is Rayleigh scattering?
- g) What do you mean by LED modulation bandwidth?
- h) What is pulse broadening?
- i) What is non-linear phase modulation?
- j) What is spectral line width?

## SECTION-B

2. What is the difference between a connector and a splice? When a connector used instead of a splice?
3. Draw and explain the tunable semiconductor Lasers.
4. What is WDM light wave systems. Explain in detail.
5. A single-mode fiber is measured to have  $\lambda^2(d^2n/d\lambda^2) = 0.02$  at  $0.8 \mu m$ . Calculate the dispersion parameters  $\beta_2$  and D.
6. Draw and explain the working principle of avalanche photodiode.

## SECTION-C

7.
  - a) Draw and explain the block diagram of communication system.
  - b) Compare the two simple techniques used for the measurement of numerical aperture of optical fiber.
8.
  - a) Discuss the various design issues in the implementation of WDM light wave system.
  - b) What is the meant by the following terms when they are used in relation to injection lasers :
    - i) relaxation oscillations
    - ii) self pulsation
    - iii) partition noise.
9. **Write short note on following :**
  - a) Optical TDM systems
  - b) Frequency Chirping

**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.**