

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 : 09-05-2024

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. Answer briefly :

- a) What do mean by channel multiplexing?
- b) What is fiber bandwidth?
- c) What is pulse broadening?
- d) How is the light propagating along a fiber?
- e) Define degradation in optical receivers.
- f) What is the significant of bit error rate in receivers?
- g) What is wave guide dispersion?
- h) What are the fiber losses?
- i) How frequency chirp is formed?
- j) What is code division multiplexing?

SECTION-B

2. What is dispersion in Optical Fiber? Discuss the group velocity dispersion in details.
3. Discuss the non-linear optical effects in detail.
4. Draw and explain the working of coupled cavity semiconductor Lasers.
5. Draw and explain MSM photo detector.
6. A multimode step index fiber with a core diameter of $80\ \mu\text{m}$ and relative index difference of 1.5% is operating at a wavelength of $0.85\ \mu\text{m}$. If the core refractive index is 1.48, estimate :
 - a) the normalized frequency for the fiber;
 - b) the number of guided modes.

SECTION-C

7.
 - a) Discuss degradation mechanisms in injection LASERS. Comment on these with regard to the CW life time of the devices.
 - b) What are the nonlinear optical effects?
8.
 - a) What are the different advantages of optical fiber over conventional electrical communication systems.
 - b) Briefly describe linear scattering losses in optical fiber with regard to :
 - i. LED structure
 - ii. Graded Indexed Fiber
9. Write a short note on following :
 - a) WDM light wave systems
 - b) Sources of power penalty
 - c) p n photo diode.

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.