

M.TECH
(SEM I) THEORY EXAMINATION 2022-23
OPTICAL COMMUNICATION

Time: 3 Hours

Total Marks: 70

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

- (a) Define IP.
- (b) What are the different types of semiconductor optical amplifier?
- (c) What is TDMA?
- (d) Define storage area networks.
- (e) Define ATM.
- (f) Give the significance of Soliton.
- (g) Mention the advantages of optical fiber communication.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

- (a) What is modulation? Explain the various types of modulation.
- (b) Using energy band diagram discuss the mechanism for the provision of stimulated emission in the erbium doped silica fiber amplifier (EDFA).
- (c) Explain the principle of WDM with a neat block diagram.
- (d) Explain the working of SONET/SDH with a neat diagram. Give its applications.
- (e) Explain nonlinear effects of soliton systems.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

- (a) What are the various demodulation schemes used in optical communication?
- (b) Explain Coherent optical fiber Systems with diagram.

4. Attempt any *one* part of the following: 7 x 1 = 7

- (a) Explain the construction and working of Raman amplifier.
- (b) Explain the process of digital transmission with high power fiber amplifiers.

5. Attempt any *one* part of the following: 7 x 1 = 7

- (a) What do you mean by CDMA? Why CDMA is called spread spectrum?
- (b) Discuss the various multiple access schemes in Optical Communication Systems.

6. Attempt any *one* part of the following: 7 x 1 = 7

- (a) Explain the network architecture of ATM.
- (b) Explain wavelength routing network.

7. Attempt any *one* part of the following: 7 x 1 = 7

- (a) What is Soliton? How it is used in WDM systems to manage the impairments?

(b) Explain Next generation optical Internets.