Printed Pages:1 **Sub Code:MTEC-021**

Paper Id: 233605 **Roll No.** | | | | | | | | | | |

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.