ME (EXTC) Sem-I (CBCGS) Dec 2016 9/12/2016

OCN

QP Code : 64269

(3 Hours) **[Total Marks : 80**

N. B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **three** questions out of the remaining **five** questions.
(3) Assume suitable data whenever necessary and justify the same.

1. (a) Define path, line and section used in the SONET/SDH frame. **20**
(b) How the signal get degraded in optical fiber communication? Explain in brief.
(c) Compare stimulated Raman scattering and stimulated Brillouin scattering.
(d) Explain in brief the Dimensioning wavelength network.
(e) What is unidirectional and bidirectional WDM system?

2. (a) Explain Self phase and Cross phase modulation. What are Kerr nonlinearities? **10**
(b) Explain Dispersion Compensating fibers in detail. **10**

3. (a) Explain four wave mixing in detail. **10**
Consider 75 km link of dispersion shifted single mode fiber carrying two wavelengths. At 1540.0 nm and 1540.5 nm, then calculate new frequency generated due to Four wave mixing (FWM).
(b) List the properties of Solitons, and explain Loss managed Solitons in detail. **10**

4. (a) What is optical transport network (OTN)? Explain OTN frame structure in detail. **10**
(b) Explain resonant cavity enhancement (RCE) Photo detector in detail. **10**

5. (a) What is optical amplifier? Compare Semiconductor optical amplifier, Raman amplifier and Erbium doped amplifier. **10**
(b) List and explain different Lightpath topologies, and write the equations for number of Wavelength needed to support the traffic and router ports required. **10**

6. Write short notes on: **20**
(a) Four RWA algorithms
(b) Metro Network
(c) Optical Cross connect
(d) Optical Switching
