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10TE81

**Eighth Semester B.E. Degree Examination, Aug./Sept.2020**  
**Optical Networking**

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.

**PART – A**

- 1 a. With a neat diagram, explain the evolution of optical fiber transmission system. (10 Marks)  
b. Explain self-phase modulation and cross-phase modulation using mathematical expressions. (10 Marks)
- 2 a. Explain the principle of operation of Erbium doped fiber amplifier. (10 Marks)  
b. Explain with a neat diagram, principle of operation of polarization independent isolator. (10 Marks)
- 3 a. What are the main considerations in building large switches? (10 Marks)  
b. Define wavelength converter. Explain different techniques of optoelectronic regeneration. (10 Marks)
- 4 a. Explain interchannel and intrachannel cross talk. (10 Marks)  
b. What are the important types of dispersion mechanisms in optical communication system? Explain. (10 Marks)

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**PART – B**

- 5 a. With structure of STS-1 frame, explain different section overhead and line overhead bytes in SONET. (12 Marks)  
b. Explain SONET/SDH layers. (08 Marks)
- 6 a. With a neat diagram, explain a wavelength routing mesh network. (10 Marks)  
b. Discuss Light path Topology Design (LTD) and routing and wavelength assignment (RWA) problem in WDM network design. (10 Marks)
- 7 a. With a neat diagram, explain the virtual topology design problem. (10 Marks)  
b. Explain the functions of network management. (10 Marks)
- 8 a. Explain the architecture of an access network. (10 Marks)  
b. Explain Hybrid Fiber Coax (HFC) approach. And the fiber to the curb (FTTC) approach. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

