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**Eighth Semester B.E. Degree Examination, Jan./Feb. 2021**  
**Optical Networking**

Time: 3 hrs.

Max. Marks: 100

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

**PART – A**

- 1 a. What is the need for multiplexing in an optical fiber? Explain the different multiplexing techniques for increasing the transmission capacity of optical fiber? (07 Marks)
- b. With the help of diagrams, explain the evolution of optical transmission system. (08 Marks)
- c. What is four wave mixing? Briefly explain using mathematical expression. (05 Marks)
- 2 a. What are fiber gratings? Describe a simple optical/add drop element based on fiber bragg gratings. (08 Marks)
- b. Mention any four characteristics of good optical filter. (04 Marks)
- c. Explain the principle of operation of Erbium doped fiber amplifier. (08 Marks)
- 3 a. What are the considerations in building large switches? (05 Marks)
- b. What are wavelength converters? Explain the three fundamental ways of achieving wavelength converters? (10 Marks)
- c. Explain the basic principle of a photo detector made of semi conductor. (05 Marks)
- 4 a. What is Cross Talk? Explain different approaches to reduce switch cross talk. (10 Marks)
- b. Explain interchannel and intrachannel cross talk. (10 Marks)

**PART – B**

- 5 a. Explain Element of SONET/SDH infrastructure. (10 Marks)
- b. Explain a layered view of network consisting of a second generation optical network layer and also explain with figure the flour sublayers of SONET/SDH layer. (10 Marks)
- 6 a. Explain the features of optical layers. (10 Marks)
- b. Explain the different traffic models and performance criteria of wavelength routing network. (10 Marks)
- 7 a. Explain the functions of network management and also explain with a neat diagram how network management functions implement on a typical network. (10 Marks)
- b. Explain virtual topology design problem by considering the two level topology design problem. (10 Marks)
- 8 a. Explain the architecture of an access network. (10 Marks)
- b. Discuss optical time division multiplexing for packet interleaving. (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.