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Total Number of Pages : 01

M.TECH

AR-19

M.TECH 1<sup>ST</sup> SEMESTER EXAMINATIONS NOV/DEC 2019

ECE-MPEEC1031

OPTICAL NETWORKS

Time: 3 Hours

Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A

(10 X 2=20 MARKS)

1. Answer the following questions.

- a) Why do we need to develop WDM fiber optic network?
- b) Write any 2 features of shuffle net multihop Network.
- c) What is the significance of WDM in optical networks?
- d) Define SONET/SDH.
- e) Define static and reconfigurable networks.
- f) What is an optical add/drop multiplexer?
- g) What is path protection switching?
- h) What are the constraints for wavelength assignment?
- i) What is the difference between MAN and WAN?
- j) What do you mean by digital wrapper?

PART-B

(5 X 10=50 MARKS)

Answer any five questions from the following.

Q2.

- a) Explain the Signaling and Routing functions of ATM.
- b) Explain its structure and workout the rationale behind using the specified rate of transmission.

Q3.

- a) Draw the block diagram of broadcast and select ROADM and explain its functioning.
- b) Discuss about the architectural choices for next generation transport networks.

Q4.

- a) Explain unidirectional path switched rings used in the protection of SONET / SDH.
- b) Describe the main characteristics of the three generations of digital transport networks.

Q5.

- a) Explain the working of wavelength routing PON with proper diagram.
- b) Explain light path topology design (LTD) problem in brief.

Q6.

- a) Explain the principle of operation of WDM in optical communication with its advantages and disadvantages.
- b) What is dispersion and how does it limit the bandwidth? Explain about the different types of dispersion.

Q7. Write short notes on:

- a) Couplers
- b) Wavelength Converters.

Q8.

- a) Draw the block diagram of wavelength routing PON (WRPON) and explain its working principle.
- b) Explain the different multiplexing techniques in optical networks.