

**B. Tech. Sem -VIII (E & TC Engg.) (2014 COURSE) (CBCS) :  
SUMMER - 2019**

**SUBJECT: OPTICAL FIBER COMMUNICATION**

Day: Thursday  
Date: 23/05/2019

Time: 02.30 PM TO 05.30 PM  
Max. Marks: 60

**S-2019-2943**

**N.B:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.

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- Q.1** a) Explain the ray theory transmission through optical fiber. (05)  
b) If the step-index fiber has a core of refractive index 1.5, a cladding of refractive index 1.48 and a core diameter of 100  $\mu\text{m}$  assuming that the fiber is kept in air. Calculate NA, acceptance angle of the fiber. (05)

**OR**

- Q.1** a) What are the various types of optical fiber used in optical communication? (05)  
b) Explain the Maxwell's equation and derive an expression for wave propagation in planar waveguide. (05)

- Q.2** a) What is the difference between LED and LASER? (05)  
b) Define signal-to-Noise- Ratio of a photodetector. (05)

**OR**

- Q.2** a) What is the heterojunction structure? Explain the SLED structure. (05)  
b) Explain the working principle of APD. (05)

- Q.3** a) What are the types of loss observed in optical fiber? (05)  
b) Explain the splice technique. (05)

**OR**

- Q.3** a) What is the difference between attenuation and dispersion? (05)  
b) Explain different types of connectors. (05)

- Q.4** a) Explain the receiver operation in optical communication. (05)  
b) What is OTDR? Explain its working principle with neat and clean diagram. (05)

**OR**

- Q.4** a) How is the dispersion measured in optical fiber? (05)  
b) Classify the different types of preamplifier. What is its application in optical communication? (05)

- Q.5** a) What is the non-linear effect on optical network performance? (05)  
b) What is the concept of WDM network? (05)

**OR**

- Q.5** a) What is SONET/SDH Ring? (05)  
b) Classify and explain the optical layer. (05)

- Q.6** a) What do you mean by high capacity networks? Explain any one of them. (05)  
b) What is EDFA? (05)

**OR**

- Q.6** a) What is optical CDMA? (05)  
b) Write a short note on soliton. (05)

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