B. Tech. Sem -VIII (E & TC Engg.) (2014 COURSE) (CBCS) :
SUMMER - 2019
SUBJECT: OPTICAL FIBER COMMUNICATION

Day: Thursday   Time: 02.30 PM TO 05.30 PM
Date: 23/05/2019   Max. Marks: 60
S-2019-2943

N.B:

    1)   All questions are **COMPULSORY.**

    2)   Figures to the right indicate **FULL** marks.

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 **(05)** refractive index 1.48 and a core diameter of 100 μm assuming that the fiber is kept in air. Calculate NA, acceptance angle of the fiber.

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 **(05)** propagation in planar waveguide.

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 **(05)** communication?

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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