C

Reg. No. :

Question Paper Code: 57402

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Seventh Semester

Electronics and Communication Engineering

15UEC702 - OPTICAL COMMUNICATION AND NETWORKS

(Regulation 2015)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The _____ ray passes through the axis of the fiber core.   CO1- R

    (a) Reflected   (b) Refracted   (c) Meridional   (d) Shew

2. Dispersion is used to describe the   CO2- R

    (a) Splitting of white light into its component colors.

    (b) Propagation of light in straight lines.

    (c) Bending of a beam of light when it goes from one medium to another.

    (d) Bending of a beam of light when it strikes a mirror

3. The absence of _____ in LEDs limits the internal quantum   CO3- R
    efficiency.

    (a) Proper semiconductor

    (b) Adequate power supply

    (c) Optical amplification through stimulated emission

    (d) Optical amplification through spontaneous emission

4. A technique used for determining the total fiber attenuation per unit   CO4- R
    length is

    (a) Frank   (b) Cut-off   (c)cut-back   (d) Erlangen

5. Each _____in a SONET frame can carry a digitized voice channel..   CO5- R

    (a) Frame   (b) Bit   (c)Byte   (d) None of the above

PART – B (5 x 3= 15 Marks)

6. Define Acceptance angle .An optical fiber in air has an NA of 0.4.Find the acceptance angle for merdional rays?   CO1-App

7. Define cutoff wavelength of the fiber. What is effective cut-off wavelength?   CO2- R

8. What is meant by heterojunction? List out the advantages of heterojunction.   CO3- R

9. Mention the various optical fiber measurements.   CO4- R

10. Discuss the concepts of SONET/SDH.   CO5- R

PART – C (5 x 16= 80 Marks)

11. (a) Demonstrate on the elements of an optical fiber transmission link. Also highlight the advantages of optical fiber communication.   CO1-U   (16)

Or

(b) What is numerical aperture of an optical fiber? Deduce an expression for the same.   CO1-U   (16)

12. (a) Describe about the attenuation, absorption losses and bending losses   CO2-U   (16)

Or

(b) Explain the following   CO2-U   (16)
   (i) Mode field diameter
   (ii) Modal Birefringence

13. (a) Explain the structure and operation of injection laser diode.   CO3-U   (16)

Or

(b) Explain in detail about Avalanche photo diode.   CO3-U   (16)

14. (a) Explain in detail about the fiber optic receiver operation.   CO4-U   (16)

Or

(b) Explain in detail about fiber dispersion measurement.   CO4- U   (16)

15. (a) Write short notes on wavelength routed networks.   CO5- U   (16)

Or

(b) Describe in detail about solitons.   CO5- U   (16)

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