Total No. of printed pages = 5

RETEST EXAMINATION – 2019

Semester : 6th (Old)

Subject Code : Et- 603

OPTICAL FIBRE COMMUNICATION

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Instructions :

1. *All* questions of PART – A are compulsory.
2. Answer any *five* questions from PART – B.

PART – A

Marks – 25

1. Fill in the blanks : 1×10=10

   (a) Refractive index of glass is _____.

   (b) In OFC, Antenna is used as _____ filter.

   (c) BTS means _____.

[Turn over

(d) The refractive index of cladding is _____ percentage less than the refractive index of core.

(e) Larger the _____, larger the information.

(f) Attenuation in fibres means loss of _____.

(g) Losses in fibres are expressed in _____.

(h) LASER means _____.

(i) In LED, the GaAs materials are used for invisible _____ radiation.

(j) Example of de-restoration circuit is _____.

2. Write true or false : 1×10=10

(i) FDDI means fibre distributed document interface.

(ii) Step index fibres have three modes.

(iii) Decrease of refractive index allows a higher velocity of light energy propagation.

(iv) A good quality Step Index Fibre may have a bandwidth of 500 MHZ.

(v) The attenuation is also a function of wavelength to be transmitted.

(vi) In PN junction photodiode, saturation current increases with increase in the level of illumination if reverse voltage is given.

(vii) The internal gain of the APD depends on the temperature.

(viii) Optical fibres are the light equivalent of microwave wavelengths with the additional advantage of a very narrow bandwidth.

(ix) Edge-emitting LASER diodes emit light in a direction parallel to the PN junction diode.

(x) In the PN junction photo-detector, the frequency response is limited due to the junction barrier.

3. Choose the correct answers : 1×5=5

(a) In free space, light wave travels at a speed of

(i) 3×10^6 m/sec

(ii) 3×10^8 m/sec

(b) As fibres are very good dielectries, isolation coating is

(i) required

(ii) not required

(c) In Graded Index Fibre, transit time dispersion is greatly

(i) reduced

(ii) increased

(d) For an ideal fibre, the attenuation is

(i) 100 dB

(ii) zero dB

(e) Graded Index fibres have much

(i) lower intermodel dispersion

(ii) higher intermodel dispersion.

PART – B

Marks – 45

4. (a) Write the definition of optical fibre. Classify them.

(b) Explain the Graded Index Fibre with necessary diagrams. 4+5=9

5. Write the definitions of the following with necessary diagrams : 3×3=9

(a) Total Internal Reflection

(b) Acceptance Angle

(c) Numerical Aperture.

6. What are the different modes of wave propagation ? Describe all with necessary diagram. 3+6=9

7. (a) What is the full acronym of LASER ? What are the types of LASER ?

(b) Discuss the photon production principle of LASER with necessary diagram. 1+2+6=9

8. (a) Draw the block diagram of optical fibre communication receiver and explain details.

(b) Discuss Snell's law. 6+3=9

9. Write short notes on any *three* : 3×3=9

(a) Coupler

(b) Connector

(c) LED

(d) Multiplexer

(e) Medical application of optical fibre.