SP - 107

Total No. of Pages : 2

Seat No.	

T.Y. B.Tech. (E & TC Engg.) (Semester - V) (CBCS)
Examination, December - 2023
PCC-ETC-504 : OPTICAL COMMUNICATION
Sub. Code : 80810

9775

Day and Date : Wednesday, 6 - 12 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 1.00 p.m.

Instructions : **1) Attempt all questions.**
2) Figures to the right indicate full marks.

Q1) Solve the following MCQs. **[7×2=l4]**

a) Light incident on fibers of angles _____ the acceptance angle do not propagate into the fiber.

i) Less than ii) Greater than
iii) Equal to iv) Less than and equal to

b) Most of the optical power is carried out in core region than in cladding.

i) True
ii) False

c) When the input and output power in an optical fiber is l20μW & 3μW respectively and the length of the fiber is 8 km. What is the signal attenuation per km for the fiber?

i) 3dB/km ii) 2dB/km
iii) 1dB/km iv) 4dB/km

d) Raman and Brillouin scattering are usually observed at _____

i) Low optical power densities ii) Medium optical power densities
iii) High optical power densities iv) Threshold power densities

e) What is pulse dispersion per unit length if for a graded index fiber, 0.1 μs pulse broadening is seen over a distance of 13 km?

i) 6.12ns/km ii) 7.69ns/km
iii) l0.29ns/km iv) 8.23ns/km

P.T.O.

f) When optical fibers are to be installed in a working environment, the most important parameter to be considered is?

i) Transmission property of the fiber

ii) Mechanical property of the fiber

iii) Core cladding ratio of the fiber

iv) Numerical aperture of the fiber

g) Gain guided laser structure are _____

i) Chemical laser ii) Gas laser

iii) DH injection laser iv) Quantum well laser

Q2) Solve any Two **[2×7=l4]**

a) Explain in detail bending losses in optical fiber

b) Explain Skew rays

c) Give comparison of glass and plastic fiber

Q3) Solve any Two **[2×7=l4]**

a) Explain Mode field Diameter (MFD) and propagation modes in single mode fibers

b) Explain with neat diagram the phenomenon of light propagation through optical fiber by total internal reflection?

c) Explain material and waveguide dispersion

Q4) Solve any Two **[2×7=l4]**

a) Explain surface emitting LED

b) Explain in detail WDM + EDFA performance?

c) Explain Photodetector Noise and Detector response time in detail

Q5) Solve any Two **[2×7=l4]**

a) Explain different error sources in signal detection system.

b) Explain star coupler.

c) Explain laser diode rate equations.

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