RETEST 2020
OPTICAL FIBER COMMUNICATION
6th Sem
ET-603
MAX MARKS: 70
TIME :3Hrs

Part A

Q1.

A) Choose the Correct Answer **1x5=5**

i) Which law gives the relationship between refractive index of the dielectric?
a) Law of reflection
b) Law of refraction (Snell's Law).
c) Millman's Law
d) Huygen's Law

ii) In the structure of fiber, the light is guided through the core due to total internal _____
a. reflection
b. refraction
c. diffraction
d. dispersion

iii) Snell's law relates _____.
(a) Light relfection
(b) Light refraction
(c) Light transmission
(d) Light Absorption

iv) In fiber optics, the signal is _____ waves.
a) light
b) radio
c) heat
d) very low-frequency

v) The light sources used in fibre optics communication is/are _____
a) LED's and Lasers
b) Phototransistors
c) Xenon lights
d) Incandescent

B) Fill up the gaps. **1x10=10**

i) The ratio of speed of light in air to the speed of light in another medium is called _____
ii) Optical fibers for communication use are mostly fabricated from _____
iii) Outer optical material surrounding the core that reflects the light back into the core is _____.
iv) The refractive index of the core in _____ fiber is uniform .
v) The attenuation losses are measured in terms of _____
vi) An optical light source converts _____ to _____
vii) Single mode fibers support only _____ mode of propagation.
viii) LASER stands for _____.
ix) WDM stands for _____.
x) There are two types of fiber splicing – mechanical splicing and _____ splicing.

C).True or False **1x5=5**

i) Snell's law states that, the ratio of sine of angle of incidence to the sine of angle of reflection is always constant.
ii) Most of the optical power is carried out in core region than in cladding.
iii) Frequency range of optical fiber communication is 10 MHz to 1 GHz.
iv) For mono mode fiber laser source is the best.
v) The numerical aperture of a fiber is related to the angle of acceptance as NA = sin Θa.

D) Match the following **1x5=5**

i) 3×10^8 m/s	a) stands for Electromagnetic interference
ii) Doping	b) converts optical signal into electrical signals.
ii) EMI	c) speed of light in air.
iv) Skew	d) is the process of adding impurity to intrinsic semiconductor
v) APD	e) rays travel through an optical fiber without passing through its axis.

Part B

Q2) List two uses of fiber optic cabling in the business world? 2
Q3) Define Numerical Aperture. 2
Q4) What is an optical fiber coupler? 2
Q5 Write two disadvantages of optical fiber. 2
Q6) List two types of fibre optic cables. 2

(Attempt any **three** questions from Q7 to Q12)

Q7) Draw and label the structural element of an optical fibre. 5
Q8) Explain total internal reflection with diagram. 5
Q9) Describe wavelength division multiplexing. 5
Q10) Explain any one type of coupler with diagram. 5

Q11) Write three characteristics of step index fiber and graded index fiber (each). 5
Q12) What is photo detector? Draw its symbol. Name two types of photo detector. 5

(Attempt any **two** questions from Q13 to Q17)

Q13) Explain the various types of Optical Fiber Cable with neat diagram 10.
Q14) Explain the construction and working of LED with neat diagrams. 10
Q15) Draw a block diagram of fiber optic communication system and explain in brief. 10
Q16) What is splicing? Explain the fusion splicing with a neat diagram. 10
Q17) Explain the construction and working of APD with neat diagrams. 10

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