Unit-V

1. Optical fiber communication uses _____ as the transmission medium.

A) Copper wire
B) Coaxial cable
C) Optical fiber
D) Waveguide
Answer: C) Optical fiber

2. The core of an optical fiber is surrounded by the _____.

A) Jacket
B) Cladding
C) Buffer
D) Shield
Answer: B) Cladding

3. Light propagates through an optical fiber by the principle of:

A) Refraction only
B) Diffraction
C) Total Internal Reflection
D) Polarization
Answer: C) Total Internal Reflection

4. Which optical fiber has the highest bandwidth?

A) Step-index multimode fiber
B) Graded-index multimode fiber
C) Single-mode fiber
D) Plastic fiber
Answer: C) Single-mode fiber

5. The refractive index of the core is _____ than that of the cladding.

A) Equal to
B) Less than
C) Greater than
D) Unrelated to
Answer: C) Greater than

6. Which fiber reduces modal dispersion?

A) Step-index multimode fiber
B) Graded-index multimode fiber
C) Plastic fiber

D) Hollow fiber
Answer: B) Graded-index multimode fiber

7. Optical fiber losses are generally measured in:

A) Volts
B) Watts
C) dB/km
D) Ohms
Answer: C) dB/km

8. The major loss mechanism in optical fibers is:

A) Radiation loss
B) Absorption loss
C) Scattering loss
D) All of the above
Answer: D) All of the above

9. Which light source is commonly used in short-distance optical communication?

A) LASER
B) LED
C) CRT
D) Klystron
Answer: B) LED

10. LASER stands for:

A) Light Amplification by Stimulated Emission of Radiation
B) Light Application by Standard Emission Radiation
C) Long Amplification System for Emission Radiation
D) None of these
Answer: A) Light Amplification by Stimulated Emission of Radiation

11. Which light source provides higher optical power?

A) LED
B) LASER diode
C) Photodiode
D) Solar cell
Answer: B) LASER diode

12. The detector commonly used in optical fiber communication is:

A) BJT
B) FET
C) Photodiode

D) SCR
Answer: C) Photodiode

13. PIN and APD are types of:

A) Lasers
B) LEDs
C) Optical detectors
D) Amplifiers
Answer: C) Optical detectors

14. APD stands for:

A) Avalanche Photodiode
B) Automatic Photo Detector
C) Amplified Pulse Detector
D) Applied Photodiode
Answer: A) Avalanche Photodiode

15. WDM stands for:

A) Wave Division Multiplexing
B) Wavelength Division Multiplexing
C) Wireless Data Multiplexing
D) Wideband Division Method
Answer: B) Wavelength Division Multiplexing

16. WDM allows transmission of:

A) One signal only
B) Multiple wavelengths simultaneously
C) Electrical signals only
D) Analog signals only
Answer: B) Multiple wavelengths simultaneously

17. Single-mode fiber generally operates at:

A) 850 nm
B) 1310 nm and 1550 nm
C) 450 nm
D) 650 nm
Answer: B) 1310 nm and 1550 nm

18. The purpose of a link budget is to determine:

A) Fiber color
B) Signal power margin
C) Cable length only

D) Detector size
Answer: B) Signal power margin

19. Optical communication provides:

A) Low bandwidth
B) High attenuation
C) High bandwidth
D) High interference
Answer: C) High bandwidth

20. Which detector offers internal gain?

A) PIN photodiode
B) APD
C) LED
D) LASER
Answer: B) APD

Fill in the Blanks

1. Optical fiber communication uses _____ as the carrier signal.
   Answer: Light
2. Light propagation in optical fiber is based on _____ internal reflection.
   Answer: Total
3. The central region of an optical fiber is called the _____.
   Answer: Core
4. The outer layer surrounding the core is called the _____.
   Answer: Cladding
5. The refractive index of the core is _____ than the cladding.
   Answer: Greater
6. _____ fiber supports only one propagation mode.
   Answer: Single-mode
7. _____ fiber supports multiple propagation modes.
   Answer: Multimode
8. Optical fiber attenuation is measured in _____.
   Answer: dB/km
9. Absorption, scattering, and bending are types of optical fiber _____.
   Answer: Losses
10. LED stands for Light Emitting _____.
    Answer: Diode
11. LASER stands for Light Amplification by Stimulated Emission of _____.
    Answer: Radiation
12. A commonly used optical detector is the _____ photodiode.
    Answer: PIN
13. APD stands for Avalanche _____ Diode.
    Answer: Photo
14. WDM stands for Wavelength Division _____.
    Answer: Multiplexing
15. WDM increases the _____ of an optical fiber system.
    Answer: Capacity
16. The wavelength 1550 nm provides minimum fiber _____.
    Answer: Loss
17. Optical fibers are immune to electromagnetic _____.
    Answer: Interference
18. The optical transmitter generally consists of an LED or a _____ diode.
    Answer: LASER
19. The receiver converts optical signals into _____ signals.
    Answer: Electrical
20. Link budget calculations help determine the available power _____.
    Answer: Margin

21. Graded-index fiber reduces _____ dispersion.
    Answer: Modal
22. The speed of light is highest in a _____.
    Answer: Vacuum
23. The process of combining different wavelengths is called _____.
    Answer: Multiplexing
24. Optical communication offers very _____ bandwidth.
    Answer: High
25. Optical fiber cables are widely used in _____ communication systems.
    Answer: Telecommunication.