End Semester Exam KT

TE (Semester-VII)

Optical Communication and Networks-ETC703

1. The sine of the acceptance angle (assuming an incident ray in air or vacuum) is called the: (1mrk)
   a. Numerical Aperture
   b. Critical Angle
   c. Angle of Reflection
   d. Angle of Refraction
2. The angle of incidence that provides an angle of refraction of 90-degrees: (1mrk)
   a. Numerical Aperture
   b. Critical Angle
   c. Angle of Reflection
   d. Angle of Refraction
3. Calculate the Numerical Aperture if θa =9 degrees . (2mrk)

a. 0.45

b. 2.3

c. 7.9

d. 0.156

4. A signal carried on a dedicated wavelength from source to destination node is known as a _____ (1mrk)

a) Light path

b) Light wave

c) Light node

d) Light source

5. Calculate the Number of guided modes for step index fiber if V number V=75.8 (2mrk)

a. 2000
b. 2873
c. 3000
d. 300

6. _____rays are those rays which follow helical path but they are not confined to a single plane (2mrk)
    a. Meridional
    b. Skew
    c. Refracted
    d. Reflected
7. A permanent joint formed between two different optical fibers in the field is known as a _____

(1mrk)

a) Fiber splice

b) Fiber connector

c) Fiber attenuator

d) Fiber dispersion

8. _____ are formed by sandwiching the butted fiber ends between a V-groove glass substrate and a flat glass retainer plate.

(1mrk)

a) Springroove splices

b) V-groove splices

c) Elastic splices

d) Fusion splices

9. Critical Angle is equal to _____ if n1=1.49 and n2=1.45

(2mrk)

a. 44.58 degrees

b. 76.69 degrees

c. 3 degree

d. 75.59 degree

10. Calculate the numerical aperture for a fiber with core refractive index of 1.46 and core cladding index difference Δ= 0.01

(2mrk)

a. 0.2064
b. 0.5
c. 5
d. 7

11. A silica optical fiber has a core refractive index of 1.5 and a cladding refractive index of 1.47.Determine the Numerical aperture (2mrk)

a. 9
b. 0.3
c. 0.7
d. 6

12. Mie is a _____type of loss (1mrk)
    a. absorption
    b. scattering
    c. bending
    d. Dispersion

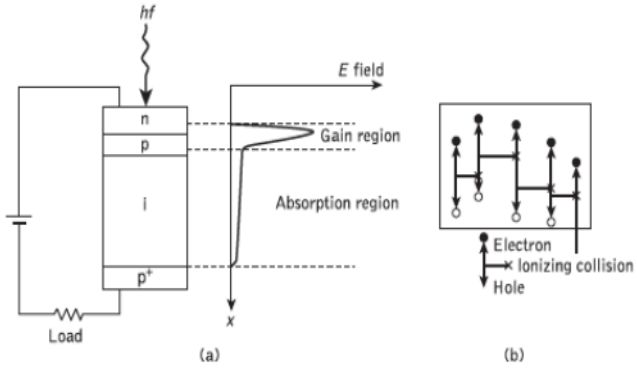
13. _____ scattering is a type of non-linear scattering (1mrk)

a. Brillouin
b. Mie
c. Chromatic
d. Intermodal

14. Radiative loss occurring when the radius of curvature of bend on the fiber is greater than the fiber diameter then the loss id called as (1mrk)
    a. Micro bending loss
    b. Macro bending loss
    c. Dispersion
    d. Absorption
15. Out of the following which is not a type of mechanical splicing (1mrk)
    a. V groov
    b. Loose tude
    c. Elastomeric
    d. Fusion
16. In an_____, a photon cannot be emitted because the electron must pass through an intermediate state and transfer momentum to the crystal lattice (1mrk)
        a. direct band gap

b. Indirect band gap
c. Quantum efficiency
d. Dark current

17. Below given diagram is of _____ (2mrk)



a. PN diode
b. PIN diode
c. Avalanche diode
d. Varactor diode

18. _____ in the laser occurs when photon colliding with an excited atom causes the stimulated emission of a second photon. (1mrk)

a) Light amplification

b) Attenuation

c) Dispersion

d) Population inversion

19. _____ converts the received optical signal into an electrical signal. (1mrk)

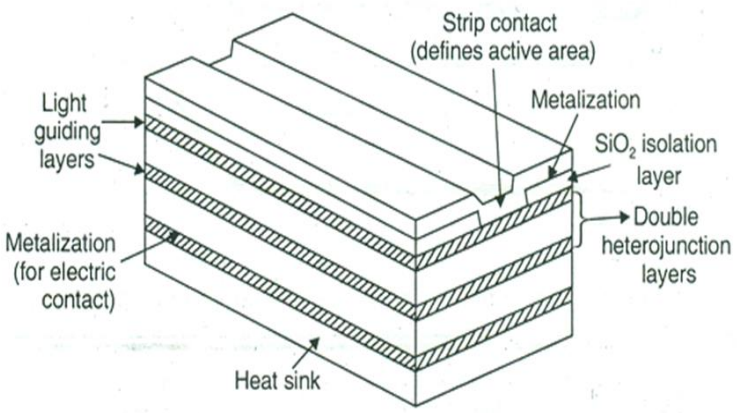
a) Detector

b) Attenuator

c) Laser

d) LED

20. Identify the type of LED structure from the diagram: (2mrk)



a. Planer LED
b. Surface Emitter LED
c. Edge Emitter LED
d. Luminance LED

21. _____emission is the process in which a quantum mechanical system (such as a molecule, an atom or a subatomic particle) transits from an excited energy state to a lower energy state and emits a quantized amount of energy in the form of a photon. (1mrk)

a. Spontaneous
b. Stimulated
c. Noise
d. Random

22. Responsivity of the detector is the measure of : (1mrk)

a. electrical output per optical input.
b. electrical Input per optical input.
c. electrical input per optical output.
d. Optical output per electrical input.

23. A directional _____is used to combine and split signals in an optical network (1mrk)

a. Isolator
b. Circulator
c. Coupler
d. Grating

24. Packet switching is also called as _____ (1mrk)

a) Bit switching

b) Cell switching

c) Trans-switching

d) Buffer switching

25. *The* _____of an on-off switch is the ratio of the output power in the on state to the: output power in the off state (ideally zero). (1mrk)

a. extinction ratio
b. Insertion Loss
c. Cross talk
d. Arrayed Waveguide

26. SONET stands for _____ (1mrk)

a) synchronous optical network
b) synchronous operational network
c) stream optical network
d) shell operational network

27. In SONET, each synchronous transfer signal STS-n is composed of _____(2mrk)

a) 2000 frames
b) 4000 frames
c) 8000 frames
d) 16000 frames

28. _____ couplers combine the different wavelength optical signal onto the fiber or separate the different wavelength optical signal output from the fiber. (1mrk)

a) 3-port

b) 2*2-star

c) WDM

d) Directional

29. It is a passive device which allows the flow of optical signal power in only one direction and preventing reflections in the backward direction. (1mrk)

a) Fiber slice

b) Optical fiber connector

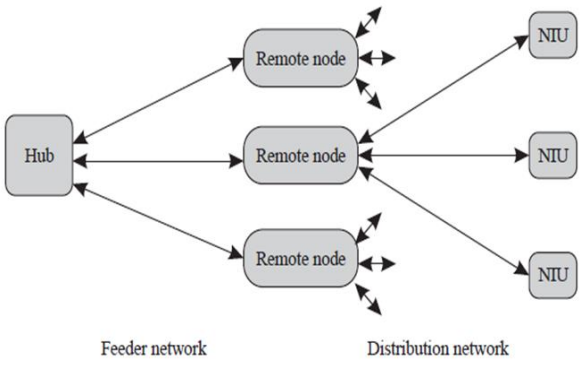
c) Optical isolator

d) Optical coupler

30. OTDM in optical Communication stands for : (1mrk)

a. Optical Time Division Multiplexing
b. Original Time domain Multiplexing
c. Optical Time domain Multiplexing
d. Original Time division Multiplexing

31. Following is the Architecture of a : (2mrk)



a. Access Network
b. SONET network
c. SDH network
d. Dual ring SONET

32. Follwing is not a type of fiber Access network: (1mrk)

a. FTTHome
b. FTTBuilding
c. FTTcabinet
d. FTTFarm

33. WDM-PON in Access networks stands for : (1mrk)

a. Wonder Division Multiplier Positive orderly network
b. Wonder Division Multiplier Passive Optical Network
c. Wavelength Division Multiplexing Passive Optical Network
d. Wavelength Division Multiplexing Positive orderly network

34. When the crosstalk signal is at a wavelength same as the desired signal's wavelength but with different phase then this form of crosstalk is called_____ crosstalk (1mrk)

a. Interchannel

b. Intrachannel

c. Interoperability

d.Interpolation

35. WDM technology as compared to DWDM technology has : (2mrk)

a. Broad Channel Spacing more than 1.6nm to 25 nm

b. Channel spacing reduced to 1.6 nm and less

c. No channel Spacing

d. Infinite channel spacing

36. _____management deals with monitoring and managing the various parameters that measure the performance of the network thus providing quality-of-service guarantees to their clients. (1mrk)

a. Fault Management

b. Security Management

c. Performance Management

d. Accounting Management

37. _____Management Includes administrative functions such as authenticating users and setting attributes such as read and write permissions on a per-user basis and protecting data belonging to network users from being tapped or corrupted by unauthorized entities. (1mrk)

a. Security Management

b. Fault Management

c. Connection Management

d. Accounting Management

38. . _____Management which is needed to ensure that optical radiation conforms to limits imposed for ensuring eye safety. (1mrk)

a. Fault Management

b. Security Management

c. Safety Management

d. Accounting Management

39. The basic function of managing the equipment including tracking the equipment in the network and managing the addition/removal of equipment, including any rerouting of traffic this may involve and the management of software versions on the equipment in the network belongs _____ (1mrk)

a. Performance Management

b. Security Management

c. Configuration Management

d. Accounting Management