



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Diploma in Electronics & Communication Engineering

Course Name – Advance Communication Engineering

Course Code - DECE602

(Semester VI)

Time : 1 Hr.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) 1 GHz frequency is equal to

a) 10^7 Hz	b) 10^9 Hz
c) 10^{10} Hz	d) 10^{11} Hz
- (2) The key electronic component in a communication satellite is

a) Telemetry	b) Command and control system
c) On board computer	d) Transponder
- (3) A satellite in low circular orbit than a geostationary orbit is known as

a) Passive satellite	b) Active satellite
c) Fast moving satellite	d) Slow moving satellite
- (4) Energy sources for satellite is

a) Battery	b) Solar cell
c) Fuel	d) Magneto hydro dynamic generator
- (5) The speed of a satellite depends on

a) Height of the satellite	b) Frequency used in the satellite
c) Weight of the satellite	d) Earth station control
- (6) A transfer orbit is

a) A polar orbit	b) A circular orbit
c) An elliptical orbit	d) Geosynchronous orbit
- (7) The earth area covered by a satellite radio beam is known as

a) Beam width	b) Bandwidth
c) Footprint	d) Zone
- (8) What band does very small aperture terminal (VSAT) first operate?

- a) L-band
c) C-band
- b) X-band
d) Ku-band
- (9) As the height of a satellite orbit gets lower, the speed of the satellite
- a) Increases
c) Remains the same
- b) Decreases
d) None of these
- (10) INTELSAT stands for
- a) International Telecommunications Satellite
c) Inter Telecommunications Satellite
- b) India Telecommunications Satellite
d) International Telephone Satellite
- (11) For an elliptical orbit
- a) $0 < e < 1$
c) $e = 1$
- b) $e = 0$
d) $e \geq 1$
- (12) Perigee is
- a) The point farthest from earth
c) The point closest approach to earth
- b) The point longest from earth
d) None of these
- (13) The carrier to noise ratio for a satellite depends upon
- a) Effective Isotropic Radiated power
c) Free space path losses
- b) Bandwidth
d) All of these
- (14) The multiple access technique suitable only for digital transmission is
- a) TDMA
c) CDMA
- b) FDMA
d) Both (a) and (b)
- (15) VSAT stands for
- a) Very small aperture terminal
c) Virtual small aperture terminal
- b) Vast small aperture terminal
d) None of these
- (16) The uplink Frequency of C-band communication satellites is around
- a) 4 GHz
c) 10 GHz
- b) 6 GHz
d) 12 GHz
- (17) Iridium satellites are _____ satellites
- a) GEO
c) MEO
- b) LEO
d) None of these
- (18) Two light sources are said to be coherent if
- a) They vibrate in same phase
c) Both (a) and (b)
- b) They vibrate with constant phase difference
d) Either (a) or (b)
- (19) Step index fiber sustains only
- a) Single mode of propagation
c) Both (a) and (b)
- b) multimode of propagation
d) None of these
- (20) Which of the following is not classified as a photoconductive device?
- a) PN photodiode
c) Photo voltaic cell
- b) PIN photodiode
d) Phototransistor
- (21) The operation of fiber optic cable is based on principle of
- a) Refraction
c) Total internal reflection
- b) Dispersion
d) None of these
- (22) The most important property of LASER light is
- a) It is a coherent source
- b) It is a non-coherent source

- c) Its beam width is large
d) Its speed is very high
- (23) Population inversion is a property found in
a) LED
b) Photodiode
c) APD
d) LASER
- (24) Type of fiber that has highest modal dispersion is
a) Single mode step index fiber
b) Multimode step index fiber
c) Single mode graded index fiber
d) Multimode graded index fiber
- (25) Which one of the following multiplexing technique involves signal composed of light waves?
a) WDM
b) TDM
c) FDM
d) CDM
- (26) Optical fiber communication operates in the wavelength band
a) 400 μm to 700 μm
b) 800 μm to 1600 μm
c) 400 nm to 700 nm
d) 800 nm to 1600 nm
- (27) A step index fiber has a core with refractive index of 1.50 and a cladding with a refractive index of 1.46. Its numerical aperture is
a) 0.165
b) 0.255
c) 0.344
d) 0.586
- (28) In an ideal multimode step index fiber
a) Optical power launched into a particular mode shifts to other mode
b) No mode coupling
c) Properties of cladding has significant effect on power transfer
d) Relative index difference is proportional to distance
- (29) Light output of a laser is related with increase in drive current, as
a) Below threshold current it increases sharply
b) Above threshold current it increases sharply
c) Below threshold current it decreases sharply
d) The slope remains same for below and above threshold current
- (30) Laser based optical communication system can operate at much higher modulation frequencies than LED based system, because
a) Laser has faster rise time than LED
b) Light output increases sharply above threshold current
c) Light emitted by laser are more directional than LED
d) Laser is a coherent optical source
- (31) Optical bandwidth is always
a) Greater than the electrical bandwidth
b) Less than the electrical bandwidth
c) Equal to the electrical bandwidth
d) Square of the electrical bandwidth
- (32) Function of receiver in optical fiber communication is to
a) Reshape the degraded signal
b) Amplify the degraded signal
c) Both amplify and reshape degraded signal
d) None of these
- (33) In purely single mode operation pulse broadening is due to
a) Intermodal dispersion
b) Intramodal dispersion
c) Large bandwidth
d) None of these
- (34) Erbium doped fiber amplifiers operate at which of the following window(s)?
a) Low dispersion window (around 1300 nm)
b) Low dispersion window (around 1550 nm)
c) Both of the windows
d) None of these

- (35) Photo detector used in optical fiber is
- Environmental noise
 - Background noise
 - Shot noise
 - None of these
- (36) Pulse broadening in multimode fiber is due to
- Intermodal dispersion
 - Intramodal dispersion
 - Both (a) and (b)
 - None of these
- (37) For short haul optical communication the suitable optical fiber is
- Single mode step index fiber
 - Multimode step index fiber
 - Graded index single mode fiber
 - Graded index multimode fiber
- (38) A step index fiber has a core with refractive index 1.57 and a cladding with refractive index 1.41. Its numerical aperture is
- 0.69
 - 0.75
 - 0.57
 - 0.65
- (39) Total internal reflection (TIR) is associated with
- Brewster angle
 - Critical angle
 - Normal incidence
 - None of these
- (40) Given step-index optical fiber parameters $n_1 = 1.45$, $n_2 = 1.444$, core radius = $4.2 \mu\text{m}$, and operating wavelength of 1550 nm , V-number of the fiber is
- 2.73
 - 3.45
 - 2.24
 - 2.91
- (41) In a semiconductor material, as temperature increases
- Probability of energy states below E_F being occupied increases
 - Probability of energy states above E_F being occupied remains the same
 - Probability of energy states above E_F being occupied decreases
 - Probability of energy states above E_F being occupied increases
- (42) A non-coherent light source for optical communications system is _____
- LED
 - ILD
 - PIN Diode
 - APD
- (43) In optical communication, as optical power is increased, BER goes on decreasing till a certain BER value is reached after which BER goes on increasing. This increase in BER is observed because of
- Non-linear effects
 - Dispersion
 - Attenuation
 - Thermal Noise
- (44) For obtaining maximum source to fiber coupling efficiency, the parameter of the fiber which should be matched with that of the source is
- Spot size
 - Geometric aperture
 - Both (a) and (b)
 - None of these
- (45) For communication of information, the fiber generally employed is _____.
- Single-mode fiber
 - Dual mode fiber
 - Multimode fiber
 - None of these
- (46) Optical nonlinearity is responsible for _____
- Broadening of pulses
 - Compression of pulses
 - Both a and b
 - Long repeater spacing communication
- (47) The efficiency of an LED for generating light is directly proportional to the
- Temperature
 - Level of doping

- c) Applied voltage
d) Current injected
- (48) The wavelength of emitted light in LED depends on
a) The type of the material
b) Temperature of the surrounding
c) The energy gap of the material
d) All of these
- (49) Which one of the following is not LED material?
a) SiO₂
b) GaAs
c) GaP
d) SiC
- (50) If two optical fibers with different diameters are to be spliced, which of the following mechanical splices will be most suitable?
a) Sung tube splice
b) Loose tube splice
c) Spring groove splice
d) V- groove splice
- (51) LEDs operate correctly when it is _____
a) Reversed biased
b) Forward biased
c) Both (a) and (b)
d) None of these
- (52) Electromagnetic wave travel at
a) 3×10^8 km/sec
b) 3×10^8 meter/sec
c) 8×10^3 km/sec
d) 3×10^8 meter/hour
- (53) Techniques that uses M different carrier frequencies that are modulated by source signal is called
a) Multiplexing
b) Spreading
c) FHSS
d) DSSS
- (54) The properties used for pseudorandom sequence are
a) Balance
b) Run
c) Correlation
d) All of these
- (55) To increase error probability, the processing gain should be
a) Increased
b) Decreased
c) Exponentially increased
d) Exponentially decreased
- (56) Which system allows larger processing gain?
a) Direct sequence spread spectrum
b) Frequency hopping spread spectrum
c) Time hopping spread spectrum
d) None of the mentioned
- (57) Fast frequency hopping is
a) Several modulations per hop
b) Several modulations per symbol
c) Several symbols per modulation
d) Several frequency hops per modulation
- (58) In OSI network architecture, the routing is performed by
a) Network layer
b) Data link layer
c) Transport layer
d) Session layer
- (59) Error control basically occurred in
a) Data link layer
b) Network layer
c) Transport layer
d) Session layer
- (60) To use the internet someone
a) Must use the world wide web
b) Must use electronic mail
c) Must use a LAN account
d) Use appropriate communication software