



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Technology in Electronics & Communication Engineering

Course Name – Analog and Digital Communication

Course Code - PCC-EC401

(Semester IV)

Time allotted : 1 Hrs.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) In communication system noise is most likely to affect the signal

a) at transmitter	b) in channel
c) in information source	d) at destination
- (2) The threshold effect is more dominant in

a) FM	b) AM
c) PCM	d) PM
- (3) Maximum efficiency in AM is

a) 33.3%	b) 50%
c) 22.2%	d) 87%
- (4) In TV telecast, the sound signal is modulated in

a) VSB	b) SSB
c) FM	d) AM
- (5) The spectral density of white noise is

a) exponential	b) uniform
c) Poisson	d) Gaussian
- (6) Companding is used

a) to overcome quantized noise in PCM	b) to protect small signals in PCM from quantizing distortion
c) to overcome impulse noise	d) none of these
- (7) Guard band increase the BW for

a) FDM	b) TDM
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- c) both FDM and TDM
d) none of these
- (8) The signal to quantization noise ratio in n bit PCM system
a) is independent of value n
b) increase with increasing value of n
c) depends upon the sampling frequency employed
d) decreases with the increasing value of n
- (9) Voice frequency bandwidth of telephone system is approximately
a) 100 Hz
b) 300 KHz
c) 400 Hz
d) 200 Hz
- (10) Adaptive delta modulation is preferred over delta modulation as
a) it gives better noise performance
b) it uses lesser bits for encoding the signal
c) it has simpler circuitry
d) it does not suffer from slope overload and threshold effects
- (11) Which of the following gives minimum probability of error
a) ASK
b) FSK
c) PSK
d) both ASK and FSK
- (12) A special AM broadcasting transmitter radiates 10 kW when the depth of modulation is 60%. The carrier power required is
a) 9 kW
b) 7.8 kW
c) 8.47 kW
d) 9.5 kW
- (13) In digital transmission, the modulation technique that requires minimum bandwidth is
a) DM
b) PCM
c) DPCM
d) PAM
- (14) The spectrum of a signal extends from 200 Hz to 3200 Hz. The minimum sampling frequency for the signal is
a) 6 kHz
b) 3 kHz
c) 1.5 kHz
d) 4 kHz
- (15) Comparison of MSK and QPSK schemes shows that
a) MSK requires less power
b) QPSK requires less power
c) filtering is simple in MSK
d) no comparison
- (16) Which of the following is not common in both AM and FM receiver?
a) RF amplifier
b) mixture
c) IF amplifier
d) slope detector
- (17) The function of buffer amplifiers in transmitter is
a) to amplify audio signal
b) to multiply frequency
c) to isolate RF state
d) none of these
- (18) The most common modulation system used for telegraphy is
a) frequency-shift keying
b) pulse-code modulation
c) single-tone modulation
d) none of these
- (19) Capture effect is active in
a) AM
b) PAM
c) PCM
d) FM
- (20) A pre-emphasis circuit provides extra noise immunity by
a) boosting the base frequencies
b) amplifying the higher audio frequencies

- c) pre-amplifying the whole audio band d) converting the phase modulation to FM
- (21) Which of the following modulated signals can be detected by an envelope detector?
- a) DSB suppressed carrier b) DSB full carrier
c) frequency modulated signal d) SSB supported carrier
- (22) Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?
- a) VSB b) DSB-SC
c) SSB d) AM
- (23) Which of the following blocks is not common in both AM and FM receivers?
- a) RF amplifiers b) mixer
c) IF amplifiers d) slope detector
- (24) For which of the following systems, the signal to noise ratio is the highest?
- a) PAM b) PWM
c) PPM d) PAM and PWM
- (25) In communication systems, noise due to quantization error is
- a) linear and signal dependent b) nonlinear and signal dependent
c) linear and signal independent at low frequencies only d) nonlinear and signal dependent at low frequencies only
- (26) The demodulation of a delta modulated signal is achieved by
- a) integration b) differentiation
c) sampling d) band pass filtering
- (27) Communication is the process of
- a) keeping in touch b) broadcasting
c) exchanging information d) entertainment by electronics
- (28) Maximum efficiency in AM is
- a) 33.3%. b) 0.5
c) 22.2%. d) 0.87
- (29) If the noise level of the signal is increased then capacity of a band limited AWGN channel
- a) is increased b) is decreased
c) remains constant d) none of these
- (30) For generation of FSK the data pattern must be given in
- a) RZ format b) NRZ format
c) split phase Manchester d) none of these
- (31) The bit rate of a digital communication system is 34 Mbps. The modulation scheme is QPSK, the bout rate of the system is
- a) 68 Mbps b) 34 Mbps
c) 17 Mbps d) 85 Mbps
- (32) Pulse stuffing is used in
- a) synchronous TDM b) asynchronous TDM
c) channel d) any TDM
- (33) In commercial TV transmission in India picture and sound signals are modulated respectively as
- a) VSB and FM b) VSB and VSB

- c) FM and VSB
d) AM and FM
- (34) In DM granular noise occurs when the modulating signal
a) increase rapidly
b) remain constant
c) decrease rapidly
d) none of these
- (35) If the maximum instantaneous phase transition of a digital modulation technique is 90° , the modulation will be recognized as
a) DPSK
b) QPSK
c) GMSK
d) BPSK
- (36) PLL can be used to demodulate
a) PAM Signal
b) PCM Signal
c) FM Signal
d) DSB-SC Signal
- (37) If modulation is 100% then message signal amplitude is _____ carrier amplitude
a) equal to
b) greater than
c) less than
d) none of these
- (38) The PAM, PWM and PPM are the types of
a) analog pulse modulation
b) digital pulse modulation
c) analog and digital pulse modulation
d) none of these
- (39) The aliasing effect can be eliminated by
a) using an antialiasing filter
b) reducing the sampling frequency
c) increasing the sampling frequency
d) increasing the modulating frequency
- (40) Granular noise is associated with
a) PCM
b) DPCM
c) DM
d) QAM
- (41) Demodulation of DSB-SC signal requires
a) an envelope detector
b) an integrator
c) a synchronous detector
d) a discriminator
- (42) The transmitted power in an FM system is
a) dependent on the number of sidebands
b) dependent on the carrier power and sidebands
c) always constant
d) none of these
- (43) The amplitude modulator works on the principle of
a) multiplication
b) addition
c) subtraction
d) division
- (44) The function of the input transducer in a communication system is
a) to transmit the message signal
b) to modulate the message signal
c) to convert message signal into electrical signal
d) none of these
- (45) The broadcasting frequency range used in frequency modulator is
a) 30 MHz to 300 MHz
b) 88 MHz to 108 MHz
c) 3 MHz to 30 MHz
d) 1 MHz to 3 MHz
- (46) FM signal can be converted into AM signal using
a) frequency discriminator
b) square law detector
c) slope detector
d) none of these
- (47) If f_m is the modulating frequency of an AM wave, the sideband frequencies of this wave

are

- a) greater than fm
- b) equal to fm
- c) less than fm
- d) none of these

(48) The number of bits required to represent a 256 level quantization in PCM is

- a) 7
- b) 8
- c) 5
- d) 6

(49) In digital communication system, the data transmission rate is specified in

- a) MHz
- b) GHz
- c) bytes/second
- d) bauds

(50) Modulation is primarily accomplished to-

- a) produce side-bands
- b) mix two waves of different frequencies
- c) transmit-audio frequency signals over long distances
- d) improve transmission efficiency

(51) Amplitude modulation is used for broadcasting because-

- a) it is more noise immune than other modulation system
- b) it consumes less transmitting power
- c) its use avoids receiver complexity
- d) no other modulation system can provide the necessary bandwidth for high fidelity

(52) Balanced modulators are used to

- a) produce suppressed carrier signal
- b) produce SSB signal
- c) produced PCM signal
- d) none of these

(53) The bandwidth requirement of AM wave is

- a) $2f_m$ where f_m is the highest modulating frequency
- b) $2f_m$
- c) $2n f_m$ where n is number of significant side-bands
- d) $f_c + f_m$ where f_c is the carrier frequency

(54) A balanced modulator circuit is used to reject

- a) carrier
- b) LSB
- c) USB
- d) LSB and USB

(55) Bandwidth required for PM is

- a) same as FM signal
- b) greater than FM signal
- c) less than FM signal
- d) less than SSB-SC signal

(56) VSB modulation as compared to SSB modulation, occupies

- a) more bandwidth
- b) less bandwidth
- c) same bandwidth
- d) signal-dependent bandwidth

(57) Which one of the following modulation techniques has got maximum SNR?

- a) AM-SSB
- b) AM-DSB
- c) FM
- d) AM-SC

(58) Which of the following are the advantages of FM broadcasting over AM broadcasting? i.

better S/N ratio ii. not subject to signal fading iii. Power efficiency is superior iv. demodulation is simpler. Select the correct answer from the code given below

- a) 1 and 2
- b) 1,2 and 4
- c) 2,3 and 4
- d) 1 and 3

(59) Which one of the following is an indirect way of generating FM?

- a) reactance FET modulator
- b) varactor diode modulator
- c) armstrong modulator
- d) reactance tube modulator

(60) Major advantage of Armstrong modulator is that

- a) it is capable to producing WBFM signals
- b) the centre frequency (carrier frequency when unmodulated) is extremely stable
- c) a large depth of modulation can be achieved
- d) none of these