

KEC 601
Digital Communication
B. Tech 3rd year
REC Kannauj

1. In uniform quantization process

- A. the step size remains same
- B. step size varies according to the values of the input signal
- C. the quantizer has linear characteristics
- D. both a and c are correct

D.both a and c are correct

2. The process of converting the analog sample into discrete form is called

- A. modulation
- B. multiplexing
- C. quantization
- D. sampling

C.quantization

3. The characteristics of compressor in μ -law companding are

- A. continuous in nature
- B. logarithmic in nature
- C. linear in nature
- D. discrete in nature

A.continuous in nature

4. The modulation techniques used to convert analog signal into digital signal are

- A. pulse code modulation
- B. delta modulation
- C. adaptive delta modulation
- D. all of the above

D.all of the above

5. The sequence of operations in which PCM is done is

- A. sampling, quantizing, encoding
- B. quantizing, encoding, sampling
- C. quantizing, sampling, encoding
- D. none of the above

A.sampling, quantizing, encoding

6. In PCM, the parameter varied in accordance with the amplitude of the modulating signal is

- A. amplitude
- B. frequency
- C. phase
- D. none of the above

D.none of the above

7. One of the disadvantages of PCM is

- A. it requires large bandwidth
- B. very high noise
- C. cannot be decoded easily
- D. all of the above

A.it requires large bandwidth

8. The expression for bandwidth BW of a PCM system, where v is the number of bits per sample and fm is the modulating frequency, is given by

- A. $bw \geq vfm$
- B. $bw \leq vfm$
- C. $bw \geq 2 vfm$
- D. $bw \geq 1/2 vfm$

A. $bw \geq v_{fm}$

9. The error probability of a PCM is

- A. calculated using noise and inter symbol interference
- B. gaussian noise + error component due to inter symbol interference
- C. calculated using power spectral density
- D. all of the above

D. all of the above

10. In Delta modulation,

- A. one bit per sample is transmitted
- B. all the coded bits used for sampling are transmitted
- C. the step size is fixed
- D. both a and c are correct

D. both a and c are correct

11. In digital transmission, the modulation technique that requires minimum bandwidth is

- A. delta modulation
- B. pcm
- C. dpcm
- D. pam

A. delta modulation

12. In Delta Modulation, the bit rate is

- A. n times the sampling frequency
- B. n times the modulating frequency
- C. n times the nyquist criteria
- D. none of the above

A.n times the sampling frequency

13. In Differential Pulse Code Modulation techniques, the decoding is performed by

- A. accumulator
- B. sampler
- C. pll
- D. quantizer

A.accumulator

14. DPCM suffers from

- A. slope over load distortion
- B. quantization noise
- C. both a & b
- D. none of the above

C.both a & b

15. The noise that affects PCM

- A. transmission noise
- B. quantizing noise
- C. transit noise
- D. both a and b are correct

D.both a and b are correct

16. The factors that cause quantizing error in delta modulation are

- A. slope overload distortion
- B. granular noise
- C. white noise
- D. both a and b are correct

D.both a and b are correct

17. Granular noise occurs when

- A. step size is too small
- B. step size is too large
- C. there is interference from the adjacent channel
- D. bandwidth is too large

B. step size is too large

18. The crest factor of a waveform is given as –

- A. $2 \times \text{peak value} / \text{rms value}$
- B. $\text{rms value} / \text{peak value}$
- C. $\text{peak value} / \text{rms value}$
- D. $\text{peak value} / 2 \times \text{rms value}$

C. peak value/ rms value

19. The digital modulation technique in which the step size is varied according to the variation in the slope of the input is called

- A. delta modulation
- B. pcm
- C. adaptive delta modulation
- D. pam

C. adaptive delta modulation

20. The digital modulation scheme in which the step size is not fixed is

- A. delta modulation
- B. adaptive delta modulation
- C. dpcm
- D. pcm

B. adaptive delta modulation

21. In Adaptive Delta Modulation, the slope error reduces and

- A. quantization error decreases

- B. quantization error increases
- C. quantization error remains same
- D. none of the above

B.quantization error increases

22. The number of voice channels that can be accommodated for transmission in T1 carrier system is

- A. 24
- B. 32
- C. 56
- D. 64

A.24

23. The maximum data transmission rate in T1 carrier system is

- A. 2.6 megabits per second
- B. 1000 megabits per second
- C. 1.544 megabits per second
- D. 5.6 megabits per second

C.1.544 megabits per second

24. T1 carrier system is used

- A. for pcm voice transmission
- B. for delta modulation
- C. for frequency modulated signals
- D. none of the above

A.for pcm voice transmission

25. Matched filter may be optimally used only for

- A. gaussian noise
- B. transit time noise

- C. flicker
- D. all of the above

A.gaussian noise

26. Matched filters may be used

- A. to estimate the frequency of the received signal
- B. in parameter estimation problems
- C. to estimate the distance of the object
- D. all of the above

D.all of the above

27. The process of coding multiplexer output into electrical pulses or waveforms for transmission is called

- A. line coding
- B. amplitude modulation
- C. fsk
- D. filtering

A.line coding

28. For a line code, the transmission bandwidth must be

- A. maximum possible
- B. as small as possible
- C. depends on the signal
- D. none of the above

B.as small as possible

29. Regenerative repeaters are used for

- A. eliminating noise
- B. reconstruction of signals
- C. transmission over long distances

D. all of the above

D.all of the above

30. Scrambling of data is

A. removing long strings of 1's and 0's

B. exchanging of data

C. transmission of digital data

D. all of the above

A.removing long strings of 1's and 0's

31. In polar RZ format for coding, symbol '0' is represented by

A. zero voltage

B. negative voltage

C. pulse is transmitted for half the duration

D. both b and c are correct

D.both b and c are correct

32. Polar coding is a technique in which

A. 1 is transmitted by a positive pulse and 0 is transmitted by negative pulse

B. 1 is transmitted by a positive pulse and 0 is transmitted by zero volts

C. both a & b

D. none of the above

A.1 is transmitted by a positive pulse and 0 is transmitted by negative pulse

33. The polarities in NRZ format use

A. complete pulse duration

B. half duration

C. both positive as well as negative value

D. each pulse is used for twice the duration

A.complete pulse duration

34. The format in which the positive half interval pulse is followed by a negative half interval pulse for transmission of '1' is

- A. polar nrz format
- B. bipolar nrz format
- C. manchester format
- D. none of the above

C.manchester format

35. The maximum synchronizing capability in coding techniques is present in

- A. manchester format
- B. polar nrz
- C. polar rz
- D. polar quaternary nrz

A.manchester format

36. The advantage of using Manchester format of coding is

- A. power saving
- B. polarity sense at the receiver
- C. noise immunity
- D. none of the above

A.power saving

37. Alternate Mark Inversion (AMI) is also known as

- A. pseudo ternary coding
- B. manchester coding
- C. polar nrz format
- D. none of the above

A.pseudo ternary coding

38. In DPSK technique, the technique used to encode bits is

- A. ami
- B. differential code
- C. uni polar rz format
- D. manchester format

B.differential code

39. Overhead bits are

- A. framing and synchronizing bits
- B. data due to noise
- C. encoded bits
- D. none of the above

A.framing and synchronizing bits

40. ISI may be removed by using

- A. differential coding
- B. manchester coding
- C. polar nrz
- D. none of the above

A.differential coding

41. Timing jitter is

- A. change in amplitude
- B. change in frequency
- C. deviation in location of the pulses
- D. all of the above

C.deviation in location of the pulses

42. Probability density function defines

- A. amplitudes of random noise
- B. density of signal
- C. probability of error
- D. all of the above

A.amplitudes of random noise

43. Impulse noise is caused due to

- A. switching transients
- B. lightening strikes
- C. power line load switching
- D. all of the above

D.all of the above

44. In coherent detection of signals,

- A. local carrier is generated
- B. carrier of frequency and phase as same as transmitted carrier is generated
- C. the carrier is in synchronization with modulated carrier
- D. all of the above

D.all of the above

45. Synchronization of signals is done using

- A. pilot clock
- B. extracting timing information from the received signal
- C. transmitter and receiver connected to master timing source
- D. all of the above

D.all of the above

46. Orthogonality of two codes means

- A. the integrated product of two different code words is zero

- B. the integrated product of two different code words is one
- C. the integrated product of two same code words is zero
- D. none of the above

A.the integrated product of two different code words is zero

47. In Alternate Mark Inversion (AMI) is

- A. 0 is encoded as positive pulse and 1 is encoded as negative pulse
- B. 0 is encoded as no pulse and 1 is encoded as negative pulse
- C. 0 is encoded as negative pulse and 1 is encoded as positive pulse
- D. 0 is encoded as no pulse and 1 is encoded as positive or negative pulse

B.0 is encoded as no pulse and 1 is encoded as negative pulse

48. Advantages of using AMI

- A. needs least power as due to opposite polarity
- B. prevents build-up of dc
- C. may be used for longer distance
- D. all of the above

D.all of the above

49. The interference caused by the adjacent pulses in digital transmission is called

- A. inter symbol interference
- B. white noise
- C. image frequency interference
- D. transit time noise

A.inter symbol interference

50. Eye pattern is

- A. is used to study ISI
- B. may be seen on CRO

C. resembles the shape of human eye

D. all of the above

51. The time interval over which the received signal may be sampled without error may be explained by

A. width of eye opening of eye pattern

B. rate of closure of eye of eye pattern

C. height of the eye opening of eye pattern

D. all of the above

A. width of eye opening of eye pattern

52. For a noise to be white Gaussian noise, the optimum filter is known as

A. low pass filter

B. base band filter

C. matched filter

D. bessel filter

C. matched filter

53. Matched filters are used

A. for maximizing signal to noise ratio

B. for signal detection

C. in radar

D. all of the above

D. all of the above

54. The number of bits of data transmitted per second is called

A. data signaling rate

B. modulation rate

C. coding

D. none of the above

A.data signaling rate

55. Pulse shaping is done

A. to control inter symbol interference

B. by limiting the bandwidth of transmission

C. after line coding and modulation of signal

D. all of the above

D.all of the above

56. The criterion used for pulse shaping to avoid ISI is

A. nyquist criterion

B. quantization

C. sample and hold

D. pll

A.nyquist criterion

57. The filter used for pulse shaping is

A. raised – cosine filter

B. sinc shaped filter

C. gaussian filter

D. all of the above

D.all of the above

58. Roll – off factor is defined as

A. the bandwidth occupied beyond the nyquist bandwidth of the filter

B. the performance of the filter or device

C. aliasing effect

D. none of the above

A.the bandwidth occupied beyond the nyquist bandwidth of the filter

59. Nyquist criterion helps in

- A. transmitting the signal without isi
- B. reduction in transmission bandwidth
- C. increase in transmission bandwidth
- D. both a and b

D.both a and b

60. The Nyquist theorem is

- A. relates the conditions in time domain and frequency domain
- B. helps in quantization
- C. limits the bandwidth requirement
- D. both a and c

D.both a and c

61. The difficulty in achieving the Nyquist criterion for system design is

- A. there are abrupt transitions obtained at edges of the bands
- B. bandwidth criterion is not easily achieved
- C. filters are not available
- D. none of the above

A.there are abrupt transitions obtained at edges of the bands

62. Equalization in digital communication

- A. reduces inter symbol interference
- B. removes distortion caused due to channel
- C. is done using linear filters
- D. all of the above

D.all of the above

63. Zero forced equalizers are used for

- A. reducing isi to zero
- B. sampling
- C. quantization
- D. none of the above

A. reducing isi to zero

64. The transmission bandwidth of the raised cosine spectrum is given by

- A. $bt = 2w(1 + \alpha)$
- B. $bt = w(1 + \alpha)$
- C. $bt = 2w(1 + 2\alpha)$
- D. $bt = 2w(2 + \alpha)$

A. $bt = 2w(1 + \alpha)$

65. The preferred orthogonalization process for its numerical stability is

- A. gram- schmidt process
- B. house holder transformation
- C. optimization
- D. all of the above

B. house holder transformation

66. For two vectors to be orthonormal, the vectors are also said to be orthogonal. The reverse of the same

- A. is true
- B. is not true
- C. is not predictable
- D. none of the above

B. is not true

67. Orthonormal set is a set of all vectors that are

- A. mutually orthonormal and are of unit length
- B. mutually orthonormal and of null length
- C. both a & b
- D. none of the above

A. mutually orthonormal and are of unit length

68. In On-Off keying, the carrier signal is transmitted with signal value '1' and '0' indicates

- A. no carrier
- B. half the carrier amplitude
- C. amplitude of modulating signal
- D. none of the above

A. no carrier

69. ASK modulated signal has the bandwidth

- A. same as the bandwidth of baseband signal
- B. half the bandwidth of baseband signal
- C. double the bandwidth of baseband signal
- D. none of the above

A. same as the bandwidth of baseband signal

70. Coherent detection of binary ASK signal requires

- A. phase synchronization
- B. timing synchronization
- C. amplitude synchronization
- D. both a and b

D. both a and b

71. The probability of error of DPSK is _____ than that of BPSK.

- A. higher

- B. lower
- C. same
- D. not predictable

A. higher

72. In Binary Phase Shift Keying system, the binary symbols 1 and 0 are represented by carrier with phase shift of

- A. $\pi/2$
- B. π
- C. 2π

B. π

73. BPSK system modulates at the rate of

- A. 1 bit/ symbol
- B. 2 bit/ symbol
- C. 4 bit/ symbol
- D. none of the above

A. 1 bit/ symbol

74. The BPSK signal has +V volts and -V volts respectively to represent

- A. 1 and 0 logic levels
- B. 11 and 00 logic levels
- C. 10 and 01 logic levels
- D. 00 and 11 logic levels

A. 1 and 0 logic levels

75. The binary waveform used to generate BPSK signal is encoded in

- A. bipolar nrz format
- B. manchester coding
- C. differential coding

D. none of the above

A. bipolar nrz format

76. The bandwidth of BFSK is _____ than BPSK.

A. lower

B. same

C. higher

D. not predictable

C. higher

77. In Binary FSK, mark and space respectively represent

A. 1 and 0

B. 0 and 1

C. 11 and 00

D. 00 and 11

A. 1 and 0

78. The frequency shifts in the BFSK usually lies in the range

A. 50 to 1000 hz

B. 100 to 2000 hz

C. 200 to 500 hz

D. 500 to 10 hz

A. 50 to 1000 hz

79. The spectrum of BFSK may be viewed as the sum of

A. two ask spectra

B. two psk spectra

C. two fsk spectra

D. none of the above

A.two ask spectra

80. The maximum bandwidth is occupied by

A. ask

B. bpsk

C. fsk

D. none of the above

C.fsk

81. QPSK is a modulation scheme where each symbol consists of

A. 4 bits

B. 2 bits

C. 1 bits

D. m number of bits, depending upon the requireme

B.2 bits

82. The data rate of QPSK is _____ of BPSK.

A. thrice

B. four times

C. twice

D. same

C.twice

83. QPSK system uses a phase shift of

A. Π

B. $\Pi/2$

C. $\Pi/4$

D. 2Π

B. $\Pi/2$

84. Minimum shift keying is similar to

- A. continuous phase frequency shift keying
- B. binary phase shift keying
- C. binary frequency shift keying
- D. qpsk

A.continuous phase frequency shift keying

85. In MSK, the difference between the higher and lower frequency is

- A. same as the bit rate
- B. half of the bit rate
- C. twice of the bit rate
- D. four time the bit rate

B.half of the bit rate

86. The technique that may be used to reduce the side band power is

- A. msk
- B. bpsk
- C. gaussian minimum shift keying
- D. bfsk

C.gaussian minimum shift keying

87. Analog to digital conversion includes

- A. sampling
- B. quantization
- C. sampling & quantization
- D. none of above

C.sampling & quantization

88. The process of converting the analog sample into discrete form is called

- A. modulation
- B. multiplexing
- C. quantization
- D. sampling

C.quantization

89. The modulation techniques used to convert analog signal into digital signal are

- A. adm
- B. pcm
- C. dm
- D. all of above

D.all of above

90. In Delta modulation,

- A. one bit per sample is transmitted
- B. all the coded bits used for sampling are transmitted
- C. the step size is fixed
- D. both a and c are correct

D.both a and c are correct

91. In digital transmission, the modulation technique that requires minimum bandwidth is

- A. delta modulation
- B. pcm
- C. dpcm
- D. pam

A.delta modulation

92. In Delta Modulation, the bit rate is

- A. n times the sampling frequency

B. n times the modulating frequency

C. n times the nyquist criteria

D. none of the above

A.n times the sampling frequency

93. In Differential Pulse Code Modulation techniques, the decoding is performed by

A. accumulator

B. sampler

C. pll

D. quantizer

A.accumulator

94. The crest factor of a waveform is given as –

A. $2 \times$ peak value/ rms value

B. rms value / peak value

C. peak value/ rms value

D. peak value/ 2 rms value

C.peak value/ rms value

95. The digital modulation technique in which the step size is varied according to the variation in the slope of the input is called

A. delta modulation

B. pcm

C. adaptive delta modulation

D. pam

C.adaptive delta modulation

96. Impulse sampling is also called as

A. delta sampling

B. ideal sampling

C. natural sampling

D. both a & b

D.both a & b

97. Nyquist Rate is given by

A. $2w$

B. $2f_{min}$

A. $2w$

98. The number of voice channels that can be accommodated for transmission in T1 carrier system is

A. 24

B. 32

C. 56

D. 64

A.24

99. For a line code, the transmission bandwidth must be

A. maximum possible

B. as small as possible

C. depends on the signal

D. none of the above

B.as small as possible

100. Scrambling of data is

A. removing long strings of 1's and 0's

B. exchanging of data

C. transmission of digital data

D. all of the above

A. removing long strings of 1's and 0's

101. Alternate Mark Inversion (AMI) is also known as

- A. pseudo ternary coding
- B. manchester coding
- C. polar nrz format
- D. none of the above

A. pseudo ternary coding

102. The process of coding multiplexer output into electrical pulses or waveforms for transmission is called

- A. line coding
- B. amplitude modulation
- C. fsk
- D. filtering

A. line coding

103. Eye pattern is

- A. is used to study isi
- B. may be seen on cro
- C. resembles the shape of human eye
- D. all of the above

D. all of the above

104. The criterion used for pulse shaping to avoid ISI is

- A. nyquist criterion
- B. quantization
- C. sample and hold
- D. pll

A. nyquist criterion

105. TDM is

- A. analog multiplexing
- B. digital multiplexing
- C. a to d converter
- D. both a & b

B.digital multiplexing

106. Random variables give relationship between _

- A. two random events
- B. probability of occurrence of two random events
- C. random event and a real number
- D. random event and its probability of occurrence

C.random event and a real number

107. The distribution function of random variable is

- A. $p(x \text{ less than or equal to } x)$
- B. $p(x \text{ greater than or equal to } x)$
- C. $p(x \text{ less than } x)$
- D. $p(x \text{ greater than } x)$

A. $p(x \text{ less than or equal to } x)$

108. The value of the probability density function of random variable is

- A. positive function
- B. negative function
- C. zero
- D. one

A.positive function

109. Which gives the measure of randomness of the random variable?

- A. mean
- B. variance
- C. standard variance
- D. pdf

B.variance

110. Random process is a function of

- A. random event and time
- B. random event and frequency
- C. random event and real number
- D. none of the mentioned

A.random event and time

111. A random process is called as stationary in strict sense if

- A. its statistics vary with shift in time origin
- B. its statistics does not vary with shift in time origin
- C. its autocorrelation vary with shift in time
- D. its autocorrelation does not vary with shift in time

A.its statistics vary with shift in time origin

112. For a stationary process, autocorrelation function depends on

- A. time
- B. time difference
- C. does not depend on time
- D. none of the mentioned

B.time difference

113. The autocorrelation function is maximum at

- A. origin

- B. infinity
- C. origin & infinity
- D. none of the mentioned

A.origin

114. Standard deviation is _

- A. rms value of dc
- B. rms value or ac
- C. either ac or dc
- D. neither dc nor ac

B.rms value or ac

115. The average power of white noise is

- A. zero
- B. unity
- C. infinity
- D. between zero and one

C.infinity

116. he distribution function of $-\infty$ and ∞ is

- A. 0 and 1
- B. 1 and 0
- C. both 0
- D. both 1

A.0 and 1

117. White noise has mean and _ variance.

- A. zero and zero
- B. finite and zero

C. zero and finite

D. one and zero

C.zero and finite

118. Power spectral density function is a?

A. real and even function

B. non negative function

C. periodic

D. all of the mentioned

D.all of the mentioned

119. Energy spectral density defines

A. signal energy per unit area

B. signal energy per unit bandwidth

C. signal power per unit area

D. signal power per unit bandwidth

B.signal energy per unit bandwidth

120. Power spectrum describes distribution of under frequency domain.

A. mean

B. variance

C. gaussian

D. none of the mentioned

B.variance

121. How can power spectral density of non periodic signal be calculated?

A. by integrating

B. by truncating

C. by converting to periodic

D. none of the mentioned

B.by truncating

122. What is Wiener-Khinchin theorem?

A. spectral density and auto-covariance makes a fourier transform pair

B. spectral density and auto-correlatioon makes a fourier transform pair

C. spectral density and variance makes a fourier transform pair

D. none of the mentioned

B.spectral density and auto-correlatioon makes a fourier transform pair

123. According to Parseval's theorem the energy spectral density curve is equal to?

A. area under magnitude of the signal

B. area under square of the magnitude of the signal

C. area under square root of magnitude of the signal

D. none of the mentioned

B.area under square of the magnitude of the signal

124. Autocorrelation is a function which matches

A. two same signals

B. two different signal

C. one signal with its delayed version

D. none of the mentioned

C.one signal with its delayed version

125. Autocorrelation is a function of

A. time

B. frequency

C. time difference

D. frequency difference

C.time difference

126. Autocorrelation is maximum at

- A. unity
- B. origin
- C. infinite point
- D. none of the mentioned

B.origin

127. Autocorrelation function of periodic signal is equal to

- A. energy of the signal
- B. power of the signal
- C. its area in frequency domain
- D. none of the mentioned

B.power of the signal

128. Autocorrelation function of white noise will have?

- A. strong peak
- B. infinite peak
- C. weak peak
- D. none of the mentioned

A.strong peak

129. Thermal noise in the communication system due to thermal electrons

- A. can be eliminated
- B. cannot be eliminated
- C. can be avoided upto some extent
- D. none of the mentioned

B.cannot be eliminated

130. White noise has power spectral density.

- A. constant
- B. variable
- C. constant & variable
- D. none of the mentioned

A.constant

131. The average noise power of white noise is

- A. 0
- B. infinity
- C. 1
- D. none of the mentioned

B.infinity

132. The channel may be affected by

- A. thermal noise
- B. interference from other signals
- C. thermal noise & interference from other signals
- D. none of the mentioned

C.thermal noise & interference from other signals

133. In Random Variable we have

- A. sample space
- B. sample points
- C. sample space & sample points
- D. none of above

C.sample space & sample points

134. In Random Process we have

- A. sample function
- B. ensemble of sample function
- C. sample space & sample points
- D. sample function & ensemble of sample function

D.sample function & ensemble of sample function

135. The detection method where carrier's phase is given importance is called as

- A. coherent detection
- B. non coherent detection
- C. coherent detection & non coherent detection
- D. none of the mentioned

A.coherent detection

136. The coherent modulation techniques are

- A. psk
- B. fsk
- C. ask
- D. all of the mentioned

D.all of the mentioned

137. The real part of a sinusoid carrier wave is called as

- A. inphase
- B. quadrature
- C. inphase & quadrature
- D. none of the mentioned

A.inphase

138. The FSK signal which has a gentle shift from one frequency level to another is called as

- A. differential psk

- B. continuous psk
- C. differential & continuous psk
- D. none of the mentioned

B.continuous psk

139. Which modulation scheme is also called as on-off keying method?

- A. ask
- B. fsk
- C. psk
- D. gmsk

A.ask

140. In differential PSK the data is

- A. encoded differentially
- B. decoded differentially
- C. encoded & decoded differentially
- D. none of the mentioned

A.encoded differentially

141. Envelope detector consists of

- A. rectifier and high pass filter
- B. rectifier and low pass filter
- C. amplifier and low pass filter
- D. amplifier and high pass filter

B.rectifier and low pass filter

142. M-ary signaling produces error performance with orthogonal signaling and error performance with multiple phase signalling.

- A. degraded, improved
- B. improved, degraded

C. improved, improved

D. degraded, degraded

B.improved, degraded

143. Which is more vulnerable to noise?

A. 2-ary system

B. 4-ary system

C. binary system

D. none of the mentioned

B.4-ary system

144. In which system, bit stream is portioned into even and odd stream?

A. bpsk

B. msk

C. qpsk

D. fsk

C.qpsk

145. The error performance of MPSK as M or k increases.

A. increases

B. decreases

C. stays constant

D. none of the mentioned

B.decreases

146. In MPSK adding new signals make it vulnerable to noise and in MFSK make it vulnerable.

A. does, does not

B. does not, does

C. does, does

D. does not, does not

A. does, does not

147. In orthogonal signalling with symbols containing more number of bits we need power.

A. more

B. less

C. double

D. none of the mentioned

A. more

148. Energy per symbol E_s is given as

A. $e_s = e_b(\log_2 m)$

B. $e_s = e_b / (\log_2 m)$

C. $e_s = 2e_b(\log_2 m)$

D. $e_s = e_b / 2(\log_2 m)$

A. $e_s = e_b(\log_2 m)$

149. The relation between the probability of bit error and probability of symbol error in M-ary orthogonal signalling is

A. $m/m-1$

B. $2m/m-1$

C. $(m/2)/m-1$

D. $m/m+1$

C. $(m/2)/m-1$

150. Performance of BFSK signal is than BPSK.

A. 3db worse

B. 3db better

C. 6db worse

D. 6db better

A. 3db worse

151. The non coherent FSK needs E_b/N_0 than coherent FSK.

A. 1db more

B. 1db less

C. 3db more

D. 3db less

A. 1db more

152. The DPSK needs E_b/N_0 than BPSK.

A. 1db more

B. 1db less

C. 3db more

D. 3db less

A. 1db more

153. Which is easier to implement and is preferred?

A. coherent system

B. non coherent system

C. coherent & non coherent system

D. none of the mentioned

B. non coherent system

154. Which is the main system consideration?

A. probability of error

B. system complexity

C. random fading channel

D. all of the mentioned

D.all of the mentioned

155. In the frequency of the carrier signal is varied based on the information in an a digital signal

- A. ask
- B. psk
- C. fsk
- D. qam

C.fsk

156. In the amplitude of the carrier signal is varied based on the information in an a digital signal

- A. ask
- B. psk
- C. fsk
- D. qam

A.ask

157. In modulation , the bit rate is 8 times the baud rate

- A. 8-qam
- B. 64-qam
- C. 256-qam
- D. none of above

C.256-qam

158. In modulation , the baud rate is 1/4 times the bit rate

- A. 4-qam
- B. 2-psk
- C. 4-psk
- D. none of above

D.none of above

159. Which of the following is not a characteristic of PN sequence?

- A. balance property
- B. autocorrelation property
- C. run property
- D. non deterministic

D.non deterministic

160. symbols.

- A. $2m$
- B. m
- C. $2m$
- D. $2m-1$

D. $2m-1$

161. PN sequence can be generated using .

- A. sequential logic circuits
- B. op-amp
- C. timer ic
- D. mosfet

A.sequential logic circuits

162. DSSS system spreads the baseband signal by the baseband pulses with a pseudo noise sequence.

- A. adding
- B. subtracting
- C. multiplying
- D. dividing

C.multiplying

163. Frequency hopping involves a periodic change of transmission

- A. signal
- B. frequency
- C. phase
- D. amplitude

B.frequency

164. What is the set of possible carrier frequencies in FH-SS?

- A. hopset
- B. hop
- C. chips
- D. symbols

A.hopset

165. The bandwidth of the channel used in the hopset is called

- A. hopping bandwidth
- B. total hopping bandwidth
- C. instantaneous bandwidth
- D. 3 db bandwidth

C.instantaneous bandwidth

166. The processing gain of FH systems is given by ratio of

- A. hopping bandwidth and hopping period
- B. instantaneous bandwidth and hopping duration
- C. 3 db bandwidth and bit rate
- D. total hopping bandwidth and instantaneous bandwidth

D.total hopping bandwidth and instantaneous bandwidth

167. Pseudorandom signal predicted.

- A. can be
- B. cannot be
- C. maybe
- D. none of the mentioned

A.can be

168. In FH-SS which of the following Modulation Demodulation Technique has been used

- A. bpsk
- B. fsk
- C. ask
- D. qam

B.fsk

169. In DS-SS which of the following Modulation Demodulation Technique has been used

- A. bpsk
- B. fsk
- C. ask
- D. qam

A.bpsk

170. Frequency division multiple access (FDMA) assigns channels to users.

- A. individual, individual
- B. many, individual
- C. individual, many
- D. many, many

A.individual, individual

171. The FDMA channel carries phone circuit at a time.

- A. ten
- B. two
- C. one
- D. several

C.one

172. The bandwidth of FDMA channel is

- A. wide
- B. narrow
- C. large
- D. zero

B.narrow

173. The symbol time in FDMA systems is thus intersymbol interference is

- A. large, high
- B. small, low
- C. small, high
- D. large, low

D.large, low

174. Due to transmission scheme bits are needed for overhead in FDMA systems.

- A. continuous, few
- B. discontinuous, few
- C. continuous, many
- D. discontinuous, many

A.continuous, few

175. is based on FDMA/FDD.

- A. gsm

- B. w-cdma
- C. cordless telephone
- D. amps

D.amps

176. Which of the following is not true for TDMA?

- A. single carrier frequency for single user
- B. discontinuous data transmission
- C. no requirement of duplexers
- D. high transmission rates

A.single carrier frequency for single user

177. Because of transmissions in TDMA, the handoff process in

- A. continuous, complex
- B. continuous, simple
- C. discontinuous, complex
- D. discontinuous, simple

D.discontinuous, simple

178. _____ synchronization overhead is required in TDMA due to _____ transmission.

- A. high, burst
- B. high, continuous
- C. low, burst
- D. no, burst

A.high, burst

179. _____ of TDMA system is a measure of the percentage of transmitted data that contains information as opposed to providing overhead for the access scheme.

- A. efficiency

- B. figure of merit
- C. signal to noise ratio
- D. mean

A. efficiency

180. A TDMA system uses 25 MHz for the forward link, which is broken into radio channels of 200 kHz. If 8 speech channels are supported on a single radio channel, how many simultaneous users can be accommodated?

- A. 25
- B. 200
- C. 1600
- D. 1000

D. 1000

181. US digital cellular system based on CDMA was standardized as

- A. is-54
- B. is-136
- C. is-95
- D. is-76

C. is-95

182. Which of the following technique used in CDMA

- A. qam
- B. gmsk
- C. ds-ss bpsk
- D. fh-ss fsk

C. ds-ss bpsk