



## BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Technology in Computer Science & Engineering

Course Name – Digital Communication

Course Code - OEC-701B

( Semester VII )

Time : 1 Hr.25 Min.

Full Marks : 70

[The figure in the margin indicates full marks.]

### Group-A

(Multiple Choice Type Question)

1 x 70=70

Choose the correct alternative from the following :

- (1) The output of sampling process are called as \_\_\_\_\_
  - a) Pulse code modulation
  - b) Pulse amplitude modulation
  - c) Frequency modulation
  - d) Amplitude modulation
- (2) The fourier tranform of one impulse train is also another impulse train with a period of the output equal to the
  - a) Period of the input
  - b) Reciprocal of the period of input signal
  - c) Half the period of input
  - d) Twice the period of the input
- (3) The effects of aliasing are \_\_\_\_\_
  - a) Attenuation of high frequency spectral replicates
  - b) Non uniform spectral gain applied to desired baseband spectrum
  - c) Attenuation and non uniform spectral gain
  - d) None of the mentioned
- (4) Which process is more economical?
  - a) Which process is more economical?
  - b) Oversampling
  - c) Aliasing
  - d) None of the mentioned
- (5) Multiplication of input signal with pulse train is done in \_\_\_\_\_ sampling.
  - a) Impulse sampling
  - b) Natural sampling
  - c) Flat top sampling
  - d) None of the mentioned
- (6) The distortion in quantization is called as
  - a) Round off error
  - b) Truncation error
  - c) Round off & Truncation error
  - d) None of the mentioned
- (7) The signals which are obtained by encoding each quantized signal into a digital word is called as

- a) PAM signal  
c) FM signal
- b) PCM signal  
d) Sampling and quantization
- (8) Quantization noise can be reduced by \_\_\_\_\_ the number of levels.  
a) Decreasing  
b) Increasing  
c) Doubling  
d) Squaring
- (9) What is bit depth?  
a) Number of quantization level  
b) Interval between two quantization levels  
c) Number of possible digital values to represent each sample  
d) None of the mentioned
- (10) In PCM the samples are dependent on \_\_\_\_\_  
a) Time  
b) Frequency  
c) Quantization level  
d) Interval between quantization level
- (11) Delta modulation uses \_\_\_\_\_ bits per sample.  
a) One  
b) Two  
c) Four  
d) Eight
- (12) Adaptive DPCM is used to  
a) Increase bandwidth  
b) Decrease bandwidth  
c) Increase SNR  
d) None of the mentioned
- (13) Uniform quantization provides better quantization for  
a) Weak signals  
b) Strong signals  
c) Weak & Strong signals  
d) None of the mentioned
- (14) In non uniform quantization, the quantization noise is \_\_\_\_\_ to signal size.  
a) Inversely proportional  
b) Directly proportional  
c) Equal  
d) Double
- (15) Companding is the process of  
a) Compression  
b) Expansion  
c) Compression & Expansion  
d) None of the mentioned
- (16) What is the standard value of  $\mu$  in  $\mu$ -law ?  
a) 128  
b) 255  
c) 256  
d) 0
- (17) Which type of quantization is most preferable for audio signals for a human ear?  
a) Uniform quantization  
b) Non uniform quantization  
c) Uniform & Non uniform quantization  
d) None of the mentioned
- (18) When pulse code modulation is applied to non binary symbols we obtain waveform called as  
a) PCM  
b) PAM  
c) M-ary  
d) line codes
- (19) The return to zero waveform consists of  
a) Unipolar RZ  
b) Bipolar RZ  
c) RZ-AMI  
d) All of the mentioned
- (20) In which waveform logic 1 and logic 0 are represented by opposite one half bit wide pulses?  
a) Unipolar RZ  
b) Bipolar RZ

- c) RZ-AMI
- (21) Non uniform quantization includes
- a) Compression  
b) Expansion  
c) Compression & Expansion  
d) None of the mentioned
- (22) To avoid aliasing
- a) Reduce the bandwidth  
b) Cut out high frequency  
c) Reduce the bandwidth & Cut out high frequency  
d) None of the mentioned
- (23) The causes for error performance degradation in communication systems are
- a) Interference  
b) Electrical noise  
c) Effect of filtering  
d) All of the mentioned
- (24) Wavelength and antenna size are related as
- a)  $\lambda/2$   
b)  $\lambda/4$   
c)  $2\lambda$   
d)  $4\lambda$
- (25) The coherent modulation techniques are
- a) PSK  
b) FSK  
c) ASK  
d) All of the mentioned
- (26) Which modulation scheme is also called as on-off keying method?
- a) ASK  
b) FSK  
c) PSK  
d) GMSK
- (27) Phase-locked loop circuitry is used for
- a) Carrier wave recovery  
b) Phase estimation  
c) Carrier wave recovery & Phase estimation  
d) None of the mentioned
- (28) 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
- (29) Channel coding relates to area such as
- a) Waveform coding  
b) Structured sequence  
c) Waveform coding & Structured sequence  
d) None of the mentioned
- (30) The bandwidth efficiency of QFSK is \_\_\_\_\_ that of BFSK.
- a) Greater than  
b) Less than  
c) Equal to  
d) None of the mentioned
- (31) The primary communication resource is
- a) Transmitted power  
b) Received power  
c) Efficiency  
d) None of the mentioned
- (32) Which modulation has lower side lobe levels?
- a) QPSK  
b) OQPSK  
c) BPSK  
d) MSK
- (33) Which modulation spectrum has narrow main lobe?
- a) QPSK  
b) OQPSK  
c) BPSK  
d) BFSK
- (34) QPSK amplitude modulates
- a) Sine function  
b) Cosine function

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- c) Sine & Cosine function  
 (35) Properties used to determine stream's fidelity  
 a) Sampling rate  
 c) Sampling rate & Bit depth  
 (36) Delta modulation is \_\_\_\_\_ conversion.  
 a) Analog to digital  
 c) Analog to digital and digital to analog  
 (37) The demodulator in delta modulation technique is  
 a) Differentiator  
 c) Quantizer  
 (38) When probability of receiving a symbol is 1 then how much information will be obtained?  
 a) Little information  
 c) No information  
 (39) Modulation process includes  
 a) Analog to digital conversion  
 c) All of the mentioned  
 (40) PCM includes the process of  
 a) Amplitude discretization  
 c) Amplitude & Time discretization  
 (41) Modulation process corresponds to \_\_\_\_\_ the amplitude, frequency or phase.  
 a) Switching  
 c) Switching or keying  
 (42) Time division multiplexing uses  
 a) High pass filter  
 c) High pass filter & Commutator  
 (43) Which provides more secure communication?  
 a) CDMA  
 c) TDMA  
 (44) Which FSK has no phase discontinuity?  
 a) Continuous FSK  
 c) Uniform FSK  
 (45) FSK reception uses  
 a) Correlation receiver  
 c) Correlation receiver & PLL  
 (46) Which is called as on-off keying?  
 a) Amplitude shift keying  
 c) Amplitude shift keying & Uni-polar PAM  
 (47) TDM is used to  
 a) Increase the information transmission rate  
 c) To use different frequency bands for different signals
- d) None of the mentioned  
 b) Bit depth  
 d) None of the mentioned  
 b) Digital to analog  
 d) None of the mentioned  
 b) Integrator  
 d) None of the mentioned  
 b) Much information  
 d) None of the mentioned  
 b) Digital to analog conversion  
 d) None of the mentioned  
 b) Time discretization  
 d) None of the mentioned  
 b) Keying  
 d) None of the mentioned  
 b) Commutator  
 d) None of the mentioned  
 b) FDMA  
 d) None of the mentioned  
 b) Discrete FSK  
 d) None of the mentioned  
 b) PLL  
 d) None of the mentioned  
 b) Uni-polar PAM  
 d) None of the mentioned  
 b) Use only one carrier frequency to handle different signals  
 d) To protect all small signals in PCM from quantizing noise

- (48) Which has lower noise immunity?
- a) TDM  
b) FDM  
c) TDM & FDM  
d) None of the mentioned
- (49) Spread spectrum is used for
- a) Encrypting signal  
b) Hiding signal  
c) Encrypting & Hiding signal  
d) None of the mentioned
- (50) Quantization is a \_\_\_\_\_ process.
- a) Few to few mapping  
b) Few to many mapping  
c) Many to few mapping  
d) Many to many mapping
- (51) If the channel is noiseless information conveyed is \_\_\_\_\_ and if it is useless channel information conveyed is \_\_\_\_\_
- a) 0,0  
b) 1,1  
c) 0,1  
d) 1,0
- (52) The output of an information source is
- a) Random  
b) Deterministic  
c) Random & Deterministic  
d) None of the mentioned
- (53) Uniform quantizer is also known as
- a) Low rise type  
b) Mid rise type  
c) High rise type  
d) None of the mentioned
- (54) Prediction gain \_\_\_\_\_ for better prediction.
- a) Increases  
b) Decreases  
c) Remains same  
d) None of the mentioned
- (55) 1 bit quantizer is a
- a) Hard limiter  
b) Two level comparator  
c) Hard limiter & Two level comparator  
d) None of the mentioned
- (56) Which helps in maintaining the step size?
- a) Delta modulation  
b) PCM  
c) DPCM  
d) Adaptive delta modulation
- (57) In early late timing error detection method if the bit is constant, then the slope will be
- a) Close to zero  
b) Close to infinity  
c) Close to origin  
d) None of the mentioned
- (58) Vector quantization is used in
- a) Audio coding  
b) Video coding  
c) Speech coding  
d) All of the mentioned
- (59) The probability density function of the envelope of narrow band noise is
- a) Uniform  
b) Gaussian  
c) Rayleigh  
d) Rician
- (60) Thermal noise power of a resistor depends upon
- a) Its resistance value  
b) Noise temperature  
c) Bandwidth  
d) Ambient temperature
- (61) Orthogonal vectors are
- a) Perpendicular to each other  
b) Their dot product must be zero  
c) One signal cannot interfere with the other  
d) All of the mentioned

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- (62) In non orthogonal signalling as  $k$  increases there is
- a) Degraded error performance
  - b) Improved bandwidth efficiency
  - c) Increase in required  $E_b/N_0$
  - d) All of the mentioned
- (63) The smaller the cross correlation, the \_\_\_\_\_ is the distance between the signal vectors.
- a) More
  - b) Less
  - c) Double
  - d) Half
- (64) Biorthogonal codes needs \_\_\_\_\_ bandwidth as orthogonal codes.
- a) Equal
  - b) Double
  - c) Half
  - d) Triple
- (65) The capacity relationship is given by
- a)  $C = W \log_2 (1 + S/N)$
  - b)  $C = 2W \log_2 (1 + S/N)$
  - c)  $C = W \log_2 (1 - S/N)$
  - d)  $C = W \log_{10} (1 + S/N)$
- (66) Entropy is the measure of
- a) Amount of information at the output
  - b) Amount of information that can be transmitted
  - c) Number of error bits from total number of bits
  - d) None of the mentioned
- (67) For a error free channel, conditional probability should be
- a) Zero
  - b) One
  - c) Equal to joint probability
  - d) Equal to individual probability
- (68) Compact disc is used for
- a) Digital storage
  - b) Reproduction of audio signals
  - c) Digital storage & Reproduction of audio signals
  - d) None of the mentioned
- (69) Decoding step consists of
- a) De-interleaving
  - b) Decoding
  - c) De-interleaving & Decoding
  - d) None of the mentioned
- (70) In interpolation
- a) New samples are added
  - b) Unreliable samples are removed
  - c) New samples are added & Unreliable samples are removed
  - d) None of the mentioned

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