

# NADAR SARASWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

<b>Course/Branch</b> : B.E/CSE	<b>Year / Semester</b> : II / III	Format No.	NAC/TLP-07a.13
<b>Subject Code</b> : EC8395	<b>Subject Name</b> : Communication Engineering	Rev. No.	02
<b>Unit No</b> : 3	<b>Unit Name</b> : Digital Modulation	Date	30.09.2020

## OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices )	BTL
1.	The preferred orthogonalization process for its numerical stability is a. Gram- Schmidt process <b>b. House holder transformation</b> c. Optimization d. All of the above	L2
2.	For two vectors to be orthonormal, the vectors are also said to be orthogonal. The reverse of the same a. Is true <b>b. Is not true</b> c. Is not predictable d. None of the above	L2
3.	Orthonormal set is a set of all vectors that are <b>a. Mutually orthonormal and are of unit length</b> b. Mutually orthonormal and of null length c. Both a & b d. None of the above	L4
4.	In On-Off keying, the carrier signal is transmitted with signal value '1' and '0' indicates <b>a. No carrier</b> b. Half the carrier amplitude c. Amplitude of modulating signal d. None of the above	L5
5.	ASK modulated signal has the bandwidth <b>a. Same as the bandwidth of baseband signal</b> b. Half the bandwidth of baseband signal c. Double the bandwidth of baseband signal d. None of the above	L1
6.	Coherent detection of binary ASK signal requires a. Phase synchronization b. Timing synchronization c. Amplitude synchronization <b>d. Both a and b</b>	L1
7.	The probability of error of DPSK is _____ than that of BPSK. <b>a. Higher</b> b. Lower c. Same	L2

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	d. Not predictable		
8.	In Binary Phase Shift Keying system, the binary symbols 1 and 0 are represented by carrier with phase shift of  a. $\Pi/2$ <b>b. <math>\Pi</math></b> c. $2\Pi$ d. 0	L1	
9.	BPSK system modulates at the rate of  <b>a. 1 bit/ symbol</b> b. 2 bit/ symbol c. 4 bit/ symbol d. None of the above	L1	
10.	The BPSK signal has +V volts and -V volts respectively to represent  <b>a. 1 and 0 logic levels</b> b. 11 and 00 logic levels c. 10 and 01 logic levels d. 00 and 11 logic levels	L3	
11.	The binary waveform used to generate BPSK signal is encoded in  <b>a. Bipolar NRZ format</b> b. Manchester coding c. Differential coding d. None of the above	L2	
12.	The bandwidth of BFSK is _____ than BPSK.  a. Lower b. Same <b>c. Higher</b> d. Not predictable	L3	
13.	In Binary FSK, mark and space respectively represent  <b>a. 1 and 0</b> b. 0 and 1 c. 11 and 00 d. 00 and 11	L1	
14.	The frequency shifts in the BFSK usually lies in the range  <b>a. 50 to 1000 Hz</b> b. 100 to 2000 Hz c. 200 to 500 Hz d. 500 to 10 Hz	L1	

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15.	The spectrum of BFSK may be viewed as the sum of <b>a. Two ASK spectra</b> b. Two PSK spectra c. Two FSK spectra d. None of the above	L2
16.	The maximum bandwidth is occupied by a. ASK b. BPSK <b>c. FSK</b> d. None of the above	L3
17.	QPSK is a modulation scheme where each symbol consists of a. 4 bits <b>b. 2 bits</b> c. 1 bits d. M number of bits, depending upon the requirement	L1
18.	The data rate of QPSK is _____ of BPSK. a. Thrice b. Four times <b>c. Twice</b> d. Same	L5
19.	QPSK system uses a phase shift of a. $\Pi$ <b>b. <math>\Pi/2</math></b> c. $\Pi/4$ d. $2\Pi$	L1
20.	Minimum shift keying is similar to <b>a. Continuous phase frequency shift keying</b> b. Binary phase shift keying c. Binary frequency shift keying d. QPSK	L1
21.	In MSK, the difference between the higher and lower frequency is a. Same as the bit rate <b>b. Half of the bit rate</b> c. Twice of the bit rate d. Four time the bit rate	L2
22.	The technique that may be used to reduce the side band power is a. MSK	L3

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	b. BPSK c. <b>Gaussian minimum shift keying</b> d. BFSK	
23	Regenerative repeaters are used for a. Eliminating noise b. Reconstruction of signals c. Transmission over long distances d. <b>All of the above</b>	L1
24	Scrambling of data is a. <b>Removing long strings of 1's and 0's</b> b. Exchanging of data c. Transmission of digital data d. All of the above	L5
25	In which system, bit stream is portioned into even and odd stream? a) BPSK b) MSK c) <b>QPSK</b> d) FSK	L1
26	The error performance of MPSK _____ as M or k increases. a) Increases b) <b>Decreases</b> c) Stays constant d) None of the mentioned	L1
27	For FSK signalling, WT is equal to a) 0 b) <b>1</b> c) 0.737 d) Infinity	L3
28	Energy per symbol $E_s$ is given as a) <b><math>E_s = E_b(\log_2 M)</math></b> b) $E_s = E_b / (\log_2 M)$ c) $E_s = 2E_b(\log_2 M)$ d) $E_s = E_b / 2(\log_2 M)$	L2

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29	Phase-locked loop circuitry is used for a) Carrier wave recovery b) Phase estimation <b>c) Carrier wave recovery &amp; Phase estimation</b> d) None of the mentioned	L3
30	In differential PSK the data is a) <b>Encoded differentially</b> b) Decoded differentially c) Encoded & Decoded differentially d) None of the mentioned	L4
31	The error probability of DPSK is _____ worse than PSK. a) Twice b) 3 db <b>c) Twice (3db)</b> d) None of the mentioned	L1
32	ISI may be removed by using <b>a. Differential coding</b> b. Manchester coding c. Polar NRZ d. None of the above	L2
33	Timing jitter is a. Change in amplitude b. Change in frequency <b>c. Deviation in location of the pulses</b> d. All of the above	L2
34	Probability density function defines <b>a. Amplitudes of random noise</b> b. Density of signal c. Probability of error d. All of the above	L4
35	Impulse noise is caused due to a. Switching transients b. Lightening strikes c. Power line load switching	L5



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	<b>d. All of the above</b>	
36	The interference caused by the adjacent pulses in digital transmission is called  <b>a. Inter symbol interference</b> b. White noise c. Image frequency interference d. Transit time noise	L1
37	Eye pattern is  a. Is used to study ISI b. May be seen on CRO c. Resembles the shape of human eye <b>d. All of the above</b>	L1
38	The time interval over which the received signal may be sampled without error may be explained by  <b>a. Width of eye opening of eye pattern</b> b. Rate of closure of eye of eye pattern c. Height of the eye opening of eye pattern d. All of the above d. $BW \geq 1/2 v f_m$	L2
39	For a noise to be white Gaussian noise, the optimum filter is known as  a. Low pass filter b. Base band filter <b>c. Matched filter</b> d. Bessel filter	L1
40	Matched filters are used  a. For maximizing signal to noise ratio b. For signal detection c. In radar <b>d. All of the above</b>	L1
41	The number of bits of data transmitted per second is called  <b>a. Data signaling rate</b> b. Modulation rate c. Coding d. None of the above	L3
42	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	L2

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	<b>d. All of the above</b>	
43	The criterion used for pulse shaping to avoid ISI is <b>a. Nyquist criterion</b> b. Quantization c. Sample and hold d. PLL	L3
44	The filter used for pulse shaping is a. Raised – cosine filter b. Sinc shaped filter c. Gaussian filter <b>d. All of the above</b>	L1
45	Roll – off factor is defined as <b>a. The bandwidth occupied beyond the Nyquist Bandwidth of the filter</b> b. The performance of the filter or device c. Aliasing effect d. None of the above	L1
46	Nyquist criterion helps in a. Transmitting the signal without ISI b. Reduction in transmission bandwidth c. Increase in transmission bandwidth <b>d. Both a and b</b>	L2
47	The difficulty in achieving the Nyquist criterion for system design is <b>a. There are abrupt transitions obtained at edges of the bands</b> b. Bandwidth criterion is not easily achieved c. Filters are not available d. None of the above	L3
48	Equalization in digital communication a. Reduces inter symbol interference b. Removes distortion caused due to channel c. Is done using linear filters <b>d. All of the above</b>	L1
49	Zero forced equalizers are used for <b>a. Reducing ISI to zero</b> b. Sampling c. Quantization d. None of the above	L5

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50	<p>The transmission bandwidth of the raised cosine spectrum is given by</p> <p>a. <math>B_t = 2w(1 + \alpha)</math>                  b. <math>B_t = w(1 + \alpha)</math>                  c. <math>B_t = 2w(1 + 2\alpha)</math>                  d. <math>B_t = 2w(2 + \alpha)</math></p>	L1
51	<p>Matched filter may be optimally used only for</p> <p>a. <b>Gaussian noise</b>                  b. Transit time noise                  c. Flicker                  d. All of the above</p>	L1
52	<p>Characteristics of Matched filter are</p> <p>a. Matched filter is used to maximize Signal to noise ratio even for non Gaussian noise                  b. It gives the output as signal energy in the absence of noise                  c. They are used for signal detection                  d. <b>All of the above</b></p>	L2
53	<p>Matched filters may be used</p> <p>a. To estimate the frequency of the received signal                  b. In parameter estimation problems                  c. To estimate the distance of the object                  d. <b>All of the above</b></p>	L3
54	<p>Regenerative repeaters are used for</p> <p>a. Eliminating noise                  b. Reconstruction of signals                  c. Transmission over long distances                  d. <b>All of the above</b></p>	L1
55	<p>Scrambling of data is</p> <p>a. <b>Removing long strings of 1's and 0's</b>                  b. Exchanging of data                  c. Transmission of digital data                  d. All of the above</p>	L5
56	<p>Matched filter provides _____ signal to noise ratio.</p> <p>a) <b>Maximum</b>                  b) Minimum                  c) Zero                  d) Infinity</p>	



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57	The impulse response of the filter is the _____ of the mirror image of the signal waveform. a) <b>Delayed version</b> b) Same version c) Delayed & Same version d) None of the mentioned	L3
58	Example for antipodal bandpass signaling is a) <b>BPSK</b> b) ASK c) FSK d) MSK	L2
59	Equalization method which is done by tracking a slowly time varying channel response is a) Preset equalization b) <b>Adaptive equalization</b> c) Variable equalization d) None of the mentioned	L3
60	For AWGN, the noise variance is a) $N_0$ b) <b><math>N_0/2</math></b> c) $2N_0$ d) $N_0/4$	L1
61	The method using which the error propagation in dubinary signalling can be avoided is a) Filtering b) <b>Precoding</b> c) Postcoding d) None of the mentioned	L3
62	In precoding technique, the binary sequence is _____ with the previous precoded bit. a) And-ed b) Or-ed c) <b>EXOR-ed</b> d) Added	L2

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63	The duobinary filter, $H_e(f)$ is called as a) Sine filter <b>b) Cosine filter</b> c) Raised cosine filter d) None of the mentioned	L3
64	The method which has greater bandwidth efficiency is called as a) Duobinary signalling <b>b) Polybinary signalling</b> c) Correlative coding d) All of the mentioned	L2

