University of Mumbai

Question Bank

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2019

Examination: SE Semester IV

Course Code: ELC404 and Course Name: Principles of Communication Engineering

Max. Marks: 80

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	Each question carry 2 marks
1.	The amplitude modulated waveform varies according to
Option A:	Amplitude of message signal
Option B:	Amplitude of Carrier signal
Option C:	Frequency of message signal
Option D:	Frequency of Carrier signal
2.	Over moduation is
Option A:	m.>0
Option B:	m>1
Option C:	m<1
Option D:	m=1
3.	Unwanted signali is called as
Option A:	Decibel
Option B:	Modulated signal
Option C:	Noise
Option D:	fitered signal
4.	Which is not an external noise
Option A:	Industrial
Option B:	Exteraterrestial
Option C:	Atmospheric
Option D:	Electrical
5.	Which wave is used for communication such as television and radio
Option A:	gamma rays
Option B:	Infrared waves
Option C:	Radio frequency waves
Option D:	X rays
6.	What is not a part of Earths atmospheric layer
Option A:	Troposhere
Option B:	Ozone Layer
Option C:	Ionosphere
Option D:	Sediment layer
7.	USB frequency in AM is
Option A:	Fc+Fm

Option B:	Fc
Option C:	Fm
Option D:	FC*Fm
8.	Bandwidth in AM is
Option A:	2Fc
Option B:	Fc+Fm /2
Option C:	1+m
Option D:	2Fm
9.	With respect to modulation depth, how do we relate Carrier and Total Power in DSBSC
Option A:	PAM=PC(1+m^2/2)
Option B:	PAM=PC(m^2/2)
Option C:	PAM=PC(m^2/4)
Option D:	PAM=PC(1+m^2/8)
10.	Calculate the total modulation index when a carrier wave is being modulated by three modulating signals with modulation indices 0.6, 0.4 and 0.3.
Option A:	0.781
Option B:	0.567
Option C:	0.345
Option D:	0.657
11.	PWM signal can be generated by using a comparator, where _____ and _____ are the inputs.
Option A:	modulating signal, sawtooth signal
Option B:	modulating signal , sinusoidal signal
Option C:	modulating signal , cosine signal
Option D:	modulating signal , impulse signal
12.	The _____ process involves mixing of two different frequency signals such that the output is a sum & difference of both the input signal frequencies
Option A:	mixing
Option B:	amplifier
Option C:	oscillator
Option D:	heterodyne
13.	Which is not a method of FM generation
Option A:	FET Reactance modulator
Option B:	Varactor Diode
Option C:	Amstrong Method
Option D:	Foster Seeley discriminator
14.	What is TRF
Option A:	Tuned Radio Frequency
Option B:	Tuned Resonant Frequency
Option C:	Time Resonated frequency
Option D:	Transfer Radio Frequency

15.	If there is signal distortion due to spectral overlap of signals it is called as
Option A:	Intermediate frequency
Option B:	Aliasing
Option C:	Flutter
Option D:	Base band
16.	Sampling with a finite width of samples is called
Option A:	Flat top Sampling
Option B:	Natural Sampling
Option C:	Quantization
Option D:	Aliasing
17.	The process of combining multiple signals into one signal, over a shared medium is called
Option A:	Sampling
Option B:	Multiplexing
Option C:	Thresholding
Option D:	Aliasing
18.	The artificial boosting of higher modulating frequencies is called
Option A:	Digitization
Option B:	Quantization
Option C:	De Emphasis
Option D:	Pre Emphasis
19.	A single tone FM signal is given by efm (t) = 20 Cos (16 π 10^6t + 25 Sin 2 π 10^3t). find the modulation index
Option A:	16
Option B:	20
Option C:	25
Option D:	Π
20.	The process by which the original modulating signal is recovered back to its original form is called
Option A:	Modulation
Option B:	Demodulation
Option C:	Replication
Option D:	Transmission
21.	A complete communication system must include:
Option A:	a transmitter and receiver
Option B:	a transmitter, a receiver, and a channel
Option C:	a transmitter, a receiver, and a spectrum analyzer
Option D:	a multiplexer, a demultiplexer, and a channel
22.	High-frequency long-distance propagation mostly depends on
Option A:	Ionospheric reflection
Option B:	Tropospheric reflection
Option C:	Ground reflection
Option D:	Inverted reflection

23.	“Man-made” noise can come from:
Option A:	Equipment that sparks
Option B:	Temperature
Option C:	Static
Option D:	Galaxy
24.	The bandwidth required for a modulated carrier depends on the:
Option A:	Noise figure
Option B:	Signal-to-noise ratio
Option C:	Signal-plus-noise to noise ratio
Option D:	Baseband frequency range
25.	The ratio between the modulating signal voltage and the carrier voltage is called:
Option A:	Amplitude modulation
Option B:	Modulation frequency
Option C:	Modulation Index
Option D:	Ratio of modulation
26.	When does over-modulation occur?
Option A:	Modulating signal voltage < Carrier voltage
Option B:	Modulating signal voltage > Carrier voltage
Option C:	Modulating signal voltage = Carrier voltage
Option D:	Modulating signal voltage = 0
27.	The information signal is also referred to as _____
Option A:	Digital signal
Option B:	Analog signal
Option C:	Baseband signal
Option D:	Broadband signal
28.	The amount of frequency deviation in FM signal depends on
Option A:	Amplitude of modulating signal
Option B:	Carrier frequency
Option C:	Modulating frequency
Option D:	Transmitter amplifier
29.	In FM broadcasting the maximum modulating frequency is limited to
Option A:	75 KHz
Option B:	50 KHz
Option C:	15 KHz
Option D:	5 KHz
30.	Demodulation is done in _____
Option A:	Channel
Option B:	Receiver
Option C:	Receiving antenna
Option D:	Transducer
31.	Fidelity is_____

Option A:	Equally amplifies all the signal frequencies at receiver
Option B:	Ability of receiver to select wanted signal from various incoming signal
Option C:	Minimum magnitude of input signal required to produce a specified output
Option D:	Ability to amplify weak signals
32.	The selectivity of a radio receiver is_____
Option A:	Its ability to reject adjacent unwanted signals
Option B:	Its ability to amplify weak signals
Option C:	Its ability to suppress noise
Option D:	The frequency at which it gives maximum amplification to signal.
33.	The process of signal compression and expansion used to reduce distortion and noise is called _____
Option A:	Amplification
Option B:	Companding
Option C:	Compressing
Option D:	Modulation
34.	Calculate the minimum sampling rate to avoid aliasing when a continuous time signal is given by $x(t) = 5 \cos 400\pi t$
Option A:	100 Hz
Option B:	200 Hz
Option C:	400 Hz
Option D:	250 Hz
35.	Quantizing noise occurs in_____
Option A:	Pulse code modulation
Option B:	Time division multiplexing
Option C:	Frequency division multiplexing
Option D:	Pulse width modulation
36.	A PAM signal can be detected using_____
Option A:	High pass filter
Option B:	Low pass filter
Option C:	Band pass filter
Option D:	All pass filter
37.	The use of non uniform quantization leads to_____
Option A:	Reduction in transmission bandwidth
Option B:	Increase in maximum SNR
Option C:	Increase in SNR for low level signals
Option D:	Simplification of quantization process
38.	In a delta modulation system, granular noise occurs when the_____
Option A:	Modulating signal increases rapidly
Option B:	Pulse rate decreases
Option C:	Pulse amplitude decreases
Option D:	Modulating signal remains constant
39.	In pulse amplitude modulation,

Option A:	Amplitude of the pulse train is varied
Option B:	Width of the pulse train is varied
Option C:	Frequency of the pulse train is varied
Option D:	Phase of signal is varied
40.	Superheterodyne principle provides selectivity at _____
Option A:	RF stage
Option B:	IF stage
Option C:	Demodulating stage
Option D:	Audio Stage
41.	Emitter modulator amplifier for Amplitude Modulation
Option A:	Operates in class B mode
Option B:	Has a high efficiency
Option C:	Output power is very high
Option D:	Operates in class A mode
42.	A carrier is simultaneously modulated by two sine waves with modulation indices of 0.3 and 0.4. The total modulation index will be
Option A:	0.5
Option B:	0.7
Option C:	1
Option D:	Data is not sufficient
43.	For a 100% AM modulated wave with carrier suppressed, the percentage power saving will be
Option A:	100
Option B:	50
Option C:	55.55
Option D:	66.66
44.	Neutralization is used in RF amplifier to
Option A:	Improve stability
Option B:	Increase bandwidth
Option C:	Improve selectivity
Option D:	Improve gain
45.	Which is not necessarily an advantage of FM over AM
Option A:	Bandwidth saving
Option B:	Less modulating power
Option C:	Better noise immunity
Option D:	Transmitter power is more useful
46.	In FM frequency deviation is
Option A:	Proportional to modulating frequency
Option B:	Proportional to amplitude of modulating signal
Option C:	Constant
Option D:	Zero
47.	In an AM wave, the majority of the power is in …….
Option A:	Lower sideband

Option B:	Upper sideband
Option C:	Carrier
Option D:	Single side band
48.	Overmodulation results in ……..
Option A:	Weakening of the signal
Option B:	Excessive carrier power
Option C:	Distortion
Option D:	Better efficiency
49.	Demodulation is done in ……
Option A:	Receiving antenna
Option B:	Transmitter
Option C:	Radio receiver
Option D:	Transmitting antenna
50.	Superhertodyne principle refers to
Option A:	Using a large number of amplifier stages
Option B:	Using a push-pull circuit
Option C:	Obtaining lower fixed intermediate frequency
Option D:	Using a large number of oscillators
51.	For the transmission of normal speech signal, the PCM channel needs a bandwidth of
Option A:	64 KHz
Option B:	16 KHz
Option C:	8 KHz
Option D:	4 KHz
52.	The Nyquist rate of signal samples/sec
Option A:	Fm
Option B:	2 fm
Option C:	N fm
Option D:	2N fm
53.	Advantage of using direct method for generation of FM signal is
Option A:	It gives high stability to FM signal frequency
Option B:	It gives high deviation to FM signal frequency
Option C:	High power FM generation is possible
Option D:	Good noise immunity
54.	Sensitivity is defined as
Option A:	Ability of receiver to amplify weak signals
Option B:	Ability to reject unwanted signals
Option C:	Ability to convert incoming signal into Image Frequency
Option D:	Ability to reject noise
55.	Quantization noise occurs in
Option A:	PCM
Option B:	PAM

Option C:	PPM
Option D:	PWM
56.	DM is a special case of
Option A:	PAM
Option B:	PPM
Option C:	PWM
Option D:	PCM
57.	Modulation is done in
Option A:	Transmitter
Option B:	Radio receiver
Option C:	Between transmitter and radio receiver
Option D:	Multiplexer
58.	The function of multiplexing is
Option A:	To reduce the bandwidth of the signal to be transmitted
Option B:	To combine multiple data streams over a single data channel
Option C:	To allow multiple data streams over multiple channels in a prescribed format
Option D:	To match the frequencies of the signal at the transmitter as well as the receiver
59.	In a transmitter ……. oscillator is used
Option A:	Hartley
Option B:	RC phase-shift
Option C:	Wien-bridge
Option D:	Crystal
60.	Pre- emphasis is required to
Option A:	To convert PM to FM
Option B:	Amplifying lower audio frequencies
Option C:	Boosting the bass frequencies
Option D:	Provide better noise immunity

Subjective Questions

	Each question carries 5 Marks
1	Explain the Diode Detector
2	Explain any one method of SSB generation
3	Explain the different types of wave propagation techniques
4	What is modulation and its need in communication
5	What is multiplexing Explain any one type.
6	A 25MHz carrier is modulated by a 400Hz audio sine wave. If the carrier voltage is 4V and the maximum deviation is 10kHz, find the modulation index for FM
7	Explain phase shift method of SSB generation.
8	Differentiate between Narrow band FM and Wideband FM
9	Explain characteristics of radio receiver.
10	What are the types of noise? Explain any two in detail.
11	What are the basic elements of Electronic communication .Explain with a block diagram
12	Differentiate between FM and PM

13	Define modulation index and percentage modulation.
14	Why SSB is preferred for transmission of good quality of signal?
15	Write short note on delayed AGC.
16	What is double spotting explain in brief.
17	What is pre- emphasis and de- emphasis.
18	Draw the circuit diagram for Lattice type balanced modulator and discuss its operation.

	Each question carries 10 Marks
1	For an AM signal v(t)=500(1+0.4sin(3140t)) sin (6.28x10^5 t) volt find the upper sideband frequency, lower sideband frequency, bandwidth, and modulation index.
2	Explain how Foster-Seelay discriminator can be used for FM detection.
3	With a neat block diagram explain the working of superheterodyne receiver. State its merits and demerits
4	With a neat block diagram explain the working of TRF receiver. What are the disadvantages of TRF receiver?
5	A 400-watt(400-W) carrier is modulated to depth of 20%, 50%, 75%, 100%. Calculate the total power in the modulated wave
6	Explain PCM transmitter with a neat block diagram. What are the advantages of PCM.
7	A sinusoidal carrier has an amplitude of 20V and frequency 200KHz. It is amplitude modulated of amplitude 6V and frequency 1KHz.Modulated voltage is developed across 80-ohm resistance. 1. Write the equation of modulated wave 2. Determine modulation index 3. Draw the spectrum of modulated wave 4. Calculate total average power
8	State advantages of FM over AM. Why AM detector principle is not suitable to demodulate FM signal?
9	What is compandor and why it is used in a PCM system.