

# UNIT-6 MCQ's

## Communication Systems

1. Communication consists of electrical means of sending information only.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Communication consists of means of sending, receiving and processing information via electromagnetic waves.

2. Audio frequency range lies between \_\_\_\_\_

- a) 2 MHz to 20 MHz
- b) 20 Hz to 20 KHz
- c) 20 KHz to 200 KHz
- d) 20 MHz to 200 MHz

[View Answer](#)

Answer: b

Explanation: As per standards audio frequency range lies in between 20 Hz to 20 KHz. This is the human audible range.

3. Super heterodyne receivers needs an extra circuitry for frequency conversion.

- a) True
- b) False

[View Answer](#)

Answer: a

Explanation: Super heterodyne receiver mixes the incoming signal frequency with the locally generated signal frequency, using a mixer, in order to convert the incoming RF signal to a low frequency signal which can be processed easily. It has better sensitivity and selectivity but it needs an extra circuitry for frequency conversion.

4. Over-modulation results in?

- a) Distortion
- b) Weakens signal
- c) Strengthens the signal
- d) provides immunity to noise

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Answer: a

Explanation: When instantaneous level of modulating signal exceeds the value necessary to provide 100% modulation, the signal is said to over-modulated. In other words, when modulation index is greater than 1, it results in Overmodulation. Thus, Overmodulation results in distortion of the modulating signal.

5. For getting 100% modulation, carrier amplitude should \_\_\_\_\_

- a) exceed signal amplitude
- b) be equal to signal amplitude
- c) be lesser than signal amplitude
- d) be equal to 0

[View Answer](#)

Answer: b

Explanation: Modulation index is the amount of modulation present in a carrier wave. It is also described as the ration of the amplitude of message signal to that of carrier signal.

Modulation Index ( $m$ ) =  $V_m/V_c$ , where  $V_m$  is maximum baseband or message signal amplitude and  $V_c$  is maximum carrier signal amplitude. So for  $m = 1$ ,  $V_m$  should be equal to  $V_c$ .

6. For 100% modulation, total power is? (related with AM/FM, but out of scope)

- a) same as the power of unmodulated signal
- b) twice as the power of unmodulated signal
- c) four times as the power of unmodulated signal
- d) one and half times as the power of unmodulated signal

View Answer

Answer: d

Explanation: Total power,  $P_t = P_c (1 + m^2/2)$ , where  $m$  is Modulated Signal,  $P_c$  is Power of Unmodulated Signal or Carrier Signal.

So, for  $m=1$ ,

$$P_t = P_c (1 + 1^2/2) = 1.5 P_c.$$

7. An AM signal is represented by  $x(t) = (30 + 2\sin(700\pi t)) \cos(2\pi t \times 10^2 t)V$ .

The modulation index is

- a) 0.7
- b) 0.066
- c) 0.341
- d) 0.916

View Answer

Answer: b

Explanation: Given equation can be written as  $30(1 + 0.066 \sin(700\pi t))$ .

Comparing it with general AM equation,  $s(t) = A_c(1 + mA_m \cos(w_m t)) \cos(w_c t)$ ,

Where,  $A_c$  = Amplitude of Carrier Signal,  $A_m$  = Amplitude of Message Signal

$m$  = Modulation Index

So modulation index( $m$ ) = 0.066.

8. AM waves is represented by which equation?

- a)  $[1 + m(t)].c(t)$
- b)  $[1 - m(t)].c(t)$
- c)  $[1 + m(t)].2c(t)$
- d)  $[1 + 2m(t)].c(t)$

View Answer

Answer: a

Explanation: Amplitude wave is represented by  $[1 + um(t)].c(t)$ , where  $c(t)$  is carrier signal,  $m(t)$  is message signal,  $u$  is Modulation Index.

9. Modulation is also called detection.

- a) True
- b) False

View Answer

Answer: b

Explanation: Modulation is encoding the message signal for efficient transmission. Whereas, Demodulation is the process to extract or decode the original message signal from the transmitted modulated signal. Demodulation is also called detection.

10. Commercial frequency deviation is \_\_\_\_\_

- a) 75 KHz
- b) 80 KHz
- c) 85 KHz
- d) 65 KHz

View Answer

Answer: a

Explanation: Frequency deviation is the difference between an FM modulated frequency and the carrier frequency. Commercial FM broadcasting uses a maximum frequency deviation of 75 KHz and maximum modulating frequency is approximately 15KHz.

11. What is the disadvantage of FM over AM?

- a) high modulating power is needed
- b) requires high output power
- c) large bandwidth required
- d) high noise is produced

View Answer

Answer: c

Explanation: Advantage of FM over AM is that the amplitude of an FM wave remains constant. In FM, the power of transmitted wave depends on amplitude of unmodulated carrier wave and hence it is constant. FM is less prone to noise compared to AM. However, wide-band FM has a wider bandwidth than AM as it's BW is given by Carson's rule which  $= 2*(\beta+1)f_m$ , where  $\beta$  = Frequency Modulation Index and  $f_m$  is frequency of modulating signal. And BW of AM  $= 2*f_m$

12. Carrier wave carries information.

- a) True
- b) False

View Answer

Answer: b

Explanation: It is a high frequency electro-magnetic wave. A carrier wave does not have any information. One of the properties like amplitude, frequency or phase of the carrier are modulated with respect to an input signal for the purpose of conveying information.

13. A wave is modulated by two sin waves having modulation indices of 0.3 and 0.5. Find the total modulation index?

- a) 0.1
- b) 0.7
- c) 0.58
- d) 0.35

View Answer

Answer: c

Explanation: Given that  $m_1 = 0.3$  and  $m_2 = 0.5$ . Total modulation index will be equal to  $\sqrt{m_1^2 + m_2^2}$ . By substituting values we have  $(\sqrt{0.3^2 + 0.5^2})$  which is equal to 0.58.

14. Detection is same as \_\_\_\_\_

- a) Modulation
- b) Mixing
- c) Filtering
- d) Demodulation

View Answer

Answer: d

Explanation: Process of extracting the original message signal from the received modulated signal is called demodulation. Demodulation is also known as detection.

15. What do you understand by the term "carrier"?

- a) waveform with constant frequency, phase and amplitude
- b) waveform for which frequency, amplitude or phase is varied
- c) waveform with high amplitude, low frequency and constant phase

d) waveform to be transmitted

[View Answer](#)

Answer: b

Explanation: A carrier wave is modulated in terms of amplitude, frequency or phase, with respect to an input signal for conveying information. Carrier wave has generally higher frequency than the input signal.

16. Diameter of antenna is doubled. The maximum range will \_\_\_\_\_

- a) be doubled
- b) be halved
- c) become four times
- d) decrease to one fourth

[View Answer](#)

Answer: a

Explanation: Range of antenna is directly proportional to antenna diameter. So if diameter of antenna is doubled its range also doubled.

17. If the modulating frequency of a carrier wave varies between 700Hz and 7KHz, find it's bandwidth?

- a) 10 KHz
- b) 23 KHz
- c) 17.3 KHz
- d) 12.6 KHz

[View Answer](#)

Answer: d

Explanation: Modulating Frequency ( $f_m$ ) =  $V_{\max} - V_{\min}$ , where,

$V_{\max}$  = Maximum Amplitude of an amplitude modulated,

$V_{\min}$  = Minimum amplitude of an amplitude modulated,

$$f_m = 7\text{KHz} - 700\text{Hz} = 6.3\text{KHz}$$

$$\text{Bandwidth} = 2f_m = 2 \times 6.3 = 12.6 \text{ KHz.}$$

18. Notch filter is a band pass filter.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Notch filter is a band stop filter since it allows most frequencies to pass through it, except a specific range. It is also known as band-reject filter. It is just opposite of a band-pass filter.

19. For what modulation index, we can expect maximum undistorted power output of a transmitter?

- a) 50%
- b) 100%
- c) 25%
- d) 0

[View Answer](#)

Answer: b

Explanation: For getting maximum undistorted power output, value of modulation index should be 1. If the value of modulation index is 1 then we can say that it is 100% modulated.

20. Modulation is used to allow the use of practical antennas.

- a) True
- b) False

[View Answer](#)

Answer: a

Explanation: Modulation is the process of varying one or more properties, like amplitude, carrier or phase, of the carrier with respect to the amplitude of the wave being propagated. It is used to separate different transmission signals and also to ensure that a message is transmitted over a long path. It is also used to allow the use of practical antennas.

21. Which of the following statement is incorrect about modulation?

- a) It is used to allow the use of practical antennas
- b) It is used to separate different transmissions
- c) It is used to reduce the required bandwidth
- d) It is used to ensure that the message is transmitted over long distances

View Answer

Answer: c

Explanation: Modulation is the process of varying one or more properties, like amplitude, carrier or phase, of the carrier with respect to the amplitude of the wave being propagated. It is used to separate different transmission signals and also to ensure that the message is transmitted over a long path. It is also used to allow the use of practical antennas.

22. Why amplitude modulation is issued for broadcasting?

- a) It is more immune to noise
- b) It has more fidelity
- c) It avoids receiver complexity
- d) It has better selectivity and sensitivity

View Answer

Answer: c

Explanation: AM broadcasting employs amplitude modulation (AM) transmissions. It is highly used as compared to others for broadcasting purpose since it avoids complexity in receiver.

23. What is the advantage of superheterodyning?

- a) High selectivity and sensitivity
- b) Low Bandwidth
- c) Low adjacent channel rejection
- d) Low fidelity

View Answer

Answer: a

Explanation: The main advantage of superheterodyning is that it has high selectivity and sensitivity. Its bandwidth remains same. Moreover, it has high adjacent channel rejection and also better fidelity.

24. In frequency modulation, noise gets decreased if we decrease deviation.

- a) True
- b) False

View Answer

Answer: b

Explanation: In frequency modulation, noise is inversely proportional to the frequency deviation. Thus noise also starts decreasing if we increase deviation.

25. High IF in superheterodyne receiver, \_\_\_\_\_

- a) improves fidelity
- b) improves selectivity
- c) improves sensitivity
- d) increases tracking problems

View Answer

Answer: d

Explanation: In superheterodyne receiver, most of the received signals gets amplified from intermediate frequency (IF). High intermediate frequency helps in tracking problems.

26. Which is the process of encoding information from a message source in suitable manner for transmission?

- a) Modulation
- b) Demodulation
- c) Encryption
- d) Decryption

[View Answer](#)

Answer: a

Explanation: Modulation is the process of encoding information from a message source in suitable manner for transmission. It translates the baseband message signal to a bandpass signal at frequencies that are very higher compared to the baseband frequency.

27. AM signal have all information in \_\_\_\_\_ of the carrier.

- a) Amplitude
- b) Magnitude
- c) Frequency
- d) Power

[View Answer](#)

Answer: a

Explanation: AM signals have all information in the amplitude of the carrier. Because, AM signal superimpose the exact relative amplitudes of the modulating signal onto the carrier.

28. In frequency modulation, the amplitude of modulated carrier signal is \_\_\_\_\_ and its frequency is \_\_\_\_\_ by the modulating message signal.

- a) Constant, constant
- b) Varied, constant
- c) Constant, varied
- d) Varied, varied

[View Answer](#)

Answer: c

Explanation: In frequency modulation (FM), the amplitude of modulated carrier signal is kept constant while its frequency is varied by the modulating message signal. FM is the most popular analog modulation technique used in mobile communication.

29. FM signals have all their information in \_\_\_\_\_ of the carrier.

- a) Amplitude
- b) Magnitude
- c) Frequency
- d) Power

[View Answer](#)

Answer: c

Explanation: FM signal have all their information in the phase or frequency of the carrier. This provides a nonlinear and very rapid improvement in reception quality once a certain minimum received signal level, called FM threshold is achieved.

30. FM has \_\_\_\_\_ noise immunity when compared to amplitude modulation.

- a) Same
- b) Less
- c) No
- d) Better

[View Answer](#)

Answer: d

Explanation: FM offers many advantages over amplitude modulation which makes it a better choice for many mobile radio applications. Frequency modulation has better noise immunity when compared to amplitude modulation.

31. FM signals are \_\_\_\_\_ susceptible to atmospheric and impulse noise as compared to AM.

- a) Largely
- b) Less
- c) Not
- d) Better

View Answer

Answer: b

Explanation: FM signals are represented as frequency variations rather than amplitude variations. Therefore, FM signals are less susceptible to atmospheric and impulse noise.

32. AM has a modulation index. State whether True or False.

- a) True
- b) False

View Answer

Answer: b

Explanation: Unlike AM, FM has a modulation index. Hence, bandwidth occupancy can be varied to obtain greater signal to noise performance. Thus, it is possible to tradeoff bandwidth occupancy for improved noise performance.

33. Which of the following is an advantage of AM systems in comparison to FM systems?

- a) Occupy less bandwidth
- b) Superior performance in fading
- c) Better noise immunity
- d) Not susceptible to impulse noise

View Answer

Answer: a

Explanation: AM signals are able to occupy less bandwidth as compared to FM signals, since the transmission system is linear. Small scale fading causes rapid fluctuations in the received signal. Thus, FM offers superior qualitative performance in fading when compared to AM.

34. Which of the following is a drawback of FM systems?

- a) Burst noise
- b) Susceptible to atmospheric noise
- c) Wider frequency band
- d) Poor performance in fading

View Answer

Answer: c

Explanation: FM systems have many advantages over AM systems. They also have certain disadvantages. FM systems require a wider frequency band in transmitting media in order to obtain the advantages of reduced noise and capture effect. It is generally several times as large as that needed for AM.

35. FM signal is better than AM signal because

- a. Less immune to noise
- b. Less adjacent channel interference
- c. Amplitude limiters are used to avoid amplitude variations
- d. All of the above

ANSWER: All of the above

Explanation:

FM signal is better than AM signal because FM signals are less immune to noise. Guard bands are provided for

less adjacent channel interference so it is easy to be recovered. Amplitude limiters are used to avoid amplitude variations that are caused while transmission due to noise.

36 A 100MHz carrier is frequency modulated by 10 KHz wave. For a frequency deviation of 50 KHz, calculate the modulation index of the FM signal.

- a. 100
- b. 50
- c. 70
- d. 90

ANSWER: 50

Explanation:

Carrier frequency  $f_c = 100\text{MHz}$

Modulating frequency  $f_m = 10\text{ KHz}$

Frequency deviation  $\Delta f = 500\text{ KHz}$

Modulation index of FM signal is given by

$$\begin{aligned} m_f &= \Delta f / f_m \\ &= 500 * 10^3 / 10 * 10^3 \\ &= 50 \end{aligned}$$

37 For a FM signal  $v(t) = 25 \cos (15 * 10^8 t + 10 \sin 1550t)$ , calculate

Modulation index

Maximum frequency deviation

- a. 10, 3000.1Hz
- b. 20, 1550.9Hz
- c. 10, 2465.9Hz
- d. 10, 2000.0Hz

ANSWER: 10, 2465.9Hz

Explanation:

Standard expression for FM signal is given by

$$v(t) = A \cos (\omega_c t + m_f \sin \omega_m t)$$

Comparing with the given equation,

Modulation index  $m_f = 10$

Maximum frequency deviation is given by

$$m_f = \Delta f / f_m$$

$$\Delta f = m_f * f_m$$

Here  $f_m = 1550 / 2\pi = 246.59\text{ Hz}$

$$\Delta f = 10 * 246.59$$

$$= 2465.9\text{Hz}$$

38 FM is disadvantageous over AM signal because

- a. much wider channel bandwidth is required
- b. FM systems are more complex and costlier
- c. Adjacent channel interference is more
- d. Both a and b

ANSWER: Both a and b

Explanation:

The guard bands are provided to prevent the interference between adjacent channels in FM signals. Guard bands of 25 KHz are allowed on the either sides so the channel width becomes  $2(75 + 25) = 200\text{KHz}$  where 75KHz is the maximum permissible frequency deviation allowed for commercial FM broadcast. So a much wider channel width is required for FM transmission. FM systems are more complex and therefore costlier than AM transmitters and receivers.

39 Determine the Bandwidth of a FM wave when the maximum deviation allowed is 75KHz and the modulating signal has a frequency of 10KHz.



- a. 170 KHz
- b. 200 KHz
- c. 100 KHz
- d. 1000 KHz

ANSWER: 170 KHz

Explanation:

Modulating frequency  $f_m = 10$  KHz

Frequency deviation  $\Delta f = 75$  KHz

According to Carson's rule,  $BW = 2(\Delta f + f_m)$

$= 2(75 + 10)$

$= 170$  KHz

40 Wide band FM has the characteristics:

- a. The frequency sensitivity  $k_f$  is large
- b. Bandwidth is wide
- c. Both a and b
- d. None of the above

ANSWER: Both a and b

Explanation:

The bandwidth of the FM signal depends upon the frequency sensitivity  $k_f$ . When  $k_f$  is large, the bandwidth of the FM signal becomes wide and this is known as Wide Band FM signal. A large number of sidebands are produced in a FM signal. The bandwidth of a wide band FM signal is very large as compared to that of an AM signal.

41 A 100MHz carrier is frequency modulated by 5 KHz wave. For a frequency deviation of 100 KHz, calculate the carrier swing of the FM signal.

- a. 2000 KHz
- b. 100 KHz
- c. 105 KHz
- d. 200 KHz

ANSWER: 200 KHz

Explanation:

Carrier frequency  $f_c = 100$ MHz

Modulating frequency  $f_m = 5$  KHz

Frequency deviation  $\Delta f = 100$  KHz

Carrier swing of the FM signal  $= 2 * \Delta f$

$= 2 * 100$

$= 200$  KHz

42 In frequency modulation,

- a. Armstrong method is used for generation
- b. Multiple side bands are generated
- c. The FM signal has infinite bandwidth
- d. All of the above

ANSWER: All of the above

Explanation:

Armstrong method is used for the generation of FM signal. The FM signal has a high quality of audio signal and reduced noise as compared to the AM wave. In FM, multiple side bands are generated therefore has infinite bandwidth though only the first few sets of sidebands are useful for detection of signal.

43 After passing the FM signal through mixer, what is the change in the frequency deviation  $\Delta$  when the modulating frequency is doubled?

- a. Becomes  $2 \Delta$
- b. Becomes  $\Delta / 2$

- c. Becomes  $\Delta^2$
- d. Remains unchanged

ANSWER: Remains unchanged

Explanation:

When a carrier is Frequency modulated, the output signal has the frequency deviated above and below the carrier frequency, this is known as Frequency Deviation. When the FM signal is passed through a mixer, the mixer changes the carrier frequency but the deviation remains unchanged.

44 Calculate the modulation index in an FM signal when  $f_m$  (modulating frequency) is 250Hz and  $\Delta f$  (frequency deviation) is 5KHz.

- a. 20
- b. 35
- c. 50
- d. 75

ANSWER: 20

Explanation:

Modulation index is the measure of how much the modulation parameter changes from its un modulated value. The modulation index of FM is given by

$$\mu = \text{frequency deviation} / \text{modulating frequency}$$

$$= \Delta f / f_m$$

Where  $\Delta f$  is the peak frequency deviation i.e. the deviation in the instantaneous value of the frequency with modulating signal.

$f_m$  is the value of modulating frequency

$$\mu = 5000/250$$

$$= 20$$

45 Calculate the maximum frequency deviation for the FM signal

$$v(t) = 10 \cos(6000t + 5\sin 2200t)$$

- a. 2200 Hz
- b. 6000 Hz
- c. 1750 Hz
- d. 11000 Hz

ANSWER: 1750 Hz

Explanation:

A standard FM signal is represented by

$$v(t) = A_c \cos(2\pi f_c t + k_f \sin 2\pi f_m t)$$

$A_c$  = carrier amplitude

$f_c$  = carrier frequency

$k_f$  = modulation index

$f_m$  = modulating frequency =  $2200/2\pi = 350$  Hz

$k_f$  = frequency deviation/modulating frequency

$5 = \text{freq deviation} / 350$

Therefore, deviation =  $5 * 350$

= 1750Hz

46 Carson's rule is used to calculate

- a. Bandwidth of FM signal
- b. Signal to noise ratio
- c. Modulation index
- d. Noise figure

ANSWER: Bandwidth of FM signal

Explanation:

According to Carson's rule, the bandwidth required is twice the sum of the maximum frequency deviation and the

maximum modulating signal frequency. Or,  
 $B=2(\Delta f + f_m)$  Hz.

47 FM is advantageous over AM as

- a. The amplitude of FM is constant. So transmitter power remains unchanged in FM but it changes in AM
- b. The depth of modulation in FM can be changed to any value by changing the frequency deviation. So the signal is not distorted
- c. There is less possibility of adjacent channel interference due to presence of guard bands
- d. All of the above

ANSWER: All of the above

Explanation:

The amplitude of FM is constant. So transmitter power remains unchanged in FM but it changes in AM. The depth of modulation in FM can be changed to any value by changing the frequency deviation. So the signal is not distorted. There is less possibility of adjacent channel interference due to presence of guard bands so interference of noise is minimum in FM.

48 The ratio of actual frequency deviation to the maximum allowable frequency deviation is called

- a. Multi tone modulation
- b. Percentage modulation
- c. Phase deviation
- d. Modulation index

ANSWER: Percentage modulation

Explanation:

Percentage modulation in Frequency Modulation is the ratio of actual frequency deviation in the FM wave to the maximum allowable frequency deviation.

49 What is the minimum modulating frequency allowed in commercial FM broadcastings?

- a. 40 KHz
- b. 75 KHz
- c. 15 KHz
- d. 120 KHz

ANSWER: 15 KHz

Explanation:

Commercial FM broadcasting uses a maximum modulating frequency of 15 KHz

50 What is the maximum frequency deviation allowed in commercial FM broadcasting?

- a. 100 KHz
- b. 75 KHz
- c. 15 KHz
- d. 120 KHz

ANSWER: 75 KHz

Explanation:

The maximum frequency deviation allowed in commercial FM broadcasting is 75KHz.

51 According to Carson's rule, Bandwidth B and modulating frequency  $f_m$  are related as

- a.  $B = 2(\Delta f + f_m)$  Hz
- b.  $B = f_m$  Hz
- c.  $B < 2f_m$  Hz
- d.  $B > 2f_m$  Hz

ANSWER:  $B = 2(\Delta f + f_m)$  Hz

Explanation:

According to Carson's rule, the bandwidth required to transmit an angle modulated wave is twice the sum of the

maximum frequency deviation and the maximum modulating signal frequency. Or,  
 $B=2(\Delta f + f_m)$  Hz.

52 Disadvantages of FM over AM are

- a. Prone to selective fading
- b. Capture effect
- c. Poorer signal to noise ratio at high audio frequencies
- d. All of the above

ANSWER: All of the above

Explanation:

FM systems have a much wider bandwidth than AM systems and therefore more prone to selective fading. FM receiver has a tendency to capture one transmitting station only called capture effect. FM transmitter and receiver require booster circuits as they have poorer signal to noise ratio at high audio frequencies.

53 The modulation index of FM is given by

- a.  $\mu = \text{frequency deviation} / \text{modulating frequency}$
- b.  $\mu = \text{modulating frequency} / \text{frequency deviation}$
- c.  $\mu = \text{modulating frequency} / \text{carrier frequency}$
- d.  $\mu = \text{carrier frequency} / \text{modulating frequency}$

ANSWER:  $\mu = \text{frequency deviation} / \text{modulating frequency}$

Explanation:

Modulation index is the measure of how much the modulation parameter changes from its un modulated value. The modulation index of FM is given by

$$\mu = \text{frequency deviation} / \text{modulating frequency} \\ = \Delta f / f_m$$

Where  $\Delta f$  is the peak frequency deviation i.e. the deviation in the instantaneous value of the frequency with modulating signal.

$f_m$  is the value of modulating frequency

54 The amount of frequency deviation in FM signal depends on

- a. Amplitude of the modulating signal
- b. Carrier frequency
- c. Modulating frequency
- d. Transmitter amplifier

ANSWER: Amplitude of the modulating signal

Explanation:

The amount of frequency deviation or variation in FM signal depends on amplitude of the modulating signal. So in case of audio signals, louder is the sound, more is the frequency deviation in the carrier signal and vice versa. The frequency deviation helps in determining the bandwidth of the FM signal.

55 In Frequency Modulation -

- a. Amplitude of the carrier remains same
- b. Frequency of the carrier varies in accordance with the modulating signal
- c. The number of side bands are infinite
- d. All of the above

ANSWER: All of the above

Explanation:

In Frequency Modulation amplitude of the carrier remains same where as frequency of the carrier varies in accordance with the modulating signal. The variation of the instantaneous carrier frequency is proportional to the modulating signal. The number of side bands are infinite in FM signal.

56 In cellular telephone network, which component controls the switching between public wireline telephone network and the base station of cells for supporting the different calls between landline to mobile, mobile to landline

and mobile to mobile calls?

a. Electronic Switching Center (ESC)

b. A Cell Controller

c. Radio Transmitter & Receiver

d. A common communication protocol

ANSWER: Electronic Switching Center (ESC)

57. In TV transmission, sound signal is \_\_\_\_\_ modulated.

a) Phase

b) Pulse

c) Frequency

d) Amplitude

View Answer

Answer: c

Explanation: Amplitude Modulation is invariably used for picture or video transmission while frequency modulation is generally used for transmission of sound due to its inherent advantages over amplitude modulation like less interference of noise and thus, better immunity. It is not suitable for transmitting videos due to its large bandwidth.

## Cellular Telephone Systems

58. Which of the following is not a characteristic of cellular telephone system?

a) Accommodate large number of users

b) Large geographic area

c) Limited frequency spectrum

d) Large frequency spectrum

View Answer

Answer: d

Explanation: Cellular systems accommodate a large number of users within a limited frequency spectrum over a large geographic area.

59. What is the responsibility of MSC in cellular telephone system?

a) Connection of mobile to base stations

b) Connection of mobile to PSTN

c) Connection of base station to PSTN

d) Connection of base station to MSC

View Answer

Answer: b

Explanation: Mobile Switching Center (MSC) is responsible for connecting all mobiles to the PSTN (Public Switched Telephone Network) in a cellular system.

60. Who has the responsibility of billing and system maintenance function in cellular system?

a) Base Station

b) PSTN

c) MSC

d) Mobile system

View Answer

Answer: c

Explanation: Mobile switching center (MSC) accommodates 100,000 subscribers and 5,000 simultaneous conversations at a time and handles all billing and system maintenance functions.

61. What is the function of FVC (Forward Voice Channel)?

- a) Voice transmission from base station to mobiles
- b) Voice transmission from mobile to base station
- c) Initiating mobile calls
- d) Broadcast all traffic request for all mobile

[View Answer](#)

Answer: a

Explanation: FVC (Forward Voice Channel) and RVC (Reverse Voice Channel) are responsible for voice transmission. FVC is used for voice transmission from base station to mobile and RVC is used for voice transmission from mobile to base station.

62. Which two channels are responsible for initiating mobile calls?

- a) FVC and FCC
- b) FVC and RVC
- c) FCC and RCC
- d) FCC and RVC

[View Answer](#)

Answer: c

Explanation: FCC (Forward Control Channel) and RCC (Reverse Control Channel) are control channels responsible for initiating mobile calls.

63. What is MIN?

- a) Subscriber's telephone number
- b) Paging message
- c) Traffic request number
- d) Mobile Internet

[View Answer](#)

Answer: a

Explanation: MIN (Mobile Identification Number) is a 10 digit unique number which represents the telephone number of subscriber.

64. What is the shape of the cell present in the cellular system?

- a) Circular
- b) Square
- c) Hexagonal
- d) Triangular

[View Answer](#)

Answer: c

Explanation: The shape of the cell present in the cellular network is hexagonal since it can cover the entire geographical area without any gap and overlapping.

65. Why the size of the cell is kept small in cellular network?

- a) Increase capacity
- b) Decrease capacity
- c) Increased size of base station electronics
- d) Slow process of handoffs

[View Answer](#)

Answer: a

Explanation: The size of the cells in cellular network is kept small because of the need of high capacity in areas with high user density and reduced size and cost of base station electronics.

66. What is handoff?

- a) Forward channel
- b) Switching technique

- c) Roamer
  - d) Guard channel
- [View Answer](#)

Answer: b

Explanation: Handoff is a switching technique which refers to the process of transferring an active call or data session from one cell in a cellular network to another.

67. The process of transferring a mobile station from one base station to another is

- a) MSC
- b) Roamer
- c) Handoff
- d) Forward channel

[View Answer](#)

Answer: c

Explanation: Handoff is the process of changing the channel associated with current connection while a call is in progress.