SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ECB301 – ANALOG AND DIGITAL COMMUNICATION

FIFTH SEMESTER (2024-2025)

TWO MARKS QUESTIONS AND ANSWERS

UNIT II- RADIO TRANSMITTER AND RECEIVER

1. What is Super Heterodyne Receiver?

The super heterodyne receiver converts all incoming RF frequencies to a fixed lower frequency,called intermediate frequency (IF). This IF is then amplitude and detected to get the original signal.

2. What is single tone and multi tone modulation?

If modulation is performed for a message signal with more than one frequency component then the modulation is called multi tone modulation. If modulation is performed for a message signal withone frequency component then the modulation is called single tone modulation.

3. What are the advantages of VSB-AM?

1. It has bandwidth greater than SSB but less than DSB system.

2. Power transmission greater than DSB but less than SSB system.

3. No low frequency component lost. Hence it avoids phase distortion.

4. How will you generating DSBSC-AM?

There are two ways of generating DSBSC-AM such as

a).Balanced modulator

b).Ring modulators

5. What are advantages of ring modulator?

a).Its output is stable.

b). It requires no external power source to activate the diodes.

c).Virtually no maintenance.

d). Long life.

6. Define Demodulation.

Demodulation or detection is the process by which modulating voltage is recovered from the modulated signal. It is the reverse process of modulation. The devices used for demodulation or detection are called demodulators or detectors. For amplitude modulation, detectors or demodulators are categorized as,

a) Square-law detectors

b) Envelope detectors

7. Define Multiplexing.

Multiplexing is defined as the process of transmitting several message signals simultaneously over a single channel.

8. Define Frequency Division Multiplexing.

Frequency division multiplexing is defined as many signals are transmitted simultaneously with each signal occupying a different frequency slot within a common bandwidth.

9. Define SSB-SC.

(i) SSB-SC stands for Single Side Band Suppressed Carrier

(ii) When only one sideband is transmitted, the modulation is referred to as Single side bandmodulation. It is also called as SSB or SSB-SC.

10. Define DSB-SC.

After modulation, the process of transmitting the sidebands (USB, LSB) alone and suppressing thecarrier is called as Double Side Band-Suppressed Carrier.

11. What are the disadvantages of DSB-FC?

(i) Power wastage takes place in DSB-FC

(ii) DSB-FC is bandwidth inefficient system.

12. Define Coherent Detection.

During Demodulation carrier is exactly coherent or synchronized in both the frequency and phase, with the original carrier wave used to generate the DSB-SC wave. This method of detection is called as coherent detection or synchronous detection.

13. What is Vestigial Side Band Modulation?

Vestigial Sideband Modulation is defined as a modulation in which one of the sideband is partially suppressed and the vestige of the other sideband is transmitted to compensate for that suppression.

14. What are the advantages of signal sideband transmission?

a) Power consumption

b) Bandwidth conservation

c) Noise reduction

15. What are the disadvantages of single side band transmission?

a) Complex receivers: Single side band systems require more complex and expensive receivers thanconventional AM transmission.

b) Tuning difficulties: Single side band receivers require more complex and precise tuning thanconventional AM receivers.

16. What is BW for AM wave?

The difference between these two extreme frequencies is equal to the bandwidth of the AM wave.Therefore, Bandwidth, B = (ωc + ωm) - (ωc - ωm) B = 2ωm

17. What is the BW of DSB-SC signal?

Bandwidth, B = (ωc + ωm) - (ωc - ωm) B = 2ω. It is obvious that the bandwidth of DSB-SC modulation is same as that of general AM waves.

18. What are the demodulation methods for DSB-SC signals?

The DSB-SC signal may be demodulated by following two methods:

(i) Synchronous detection method.

(ii) Using envelope detector after carrier reinsertion.

19. What are the methods for generating SSB-SC signal?

SSB-SC signals may be generated by two methods as under:

(i)Frequency discrimination method or filter method.

(ii)Phase discrimination method or phase-shift method.

AM signal	DSB-SC	SSB-SC
Bandwidth=2fm	Bandwidth=2fm	Bandwidth=fm
Contains USB, LSB, carrier	Contains USB,LSB	Contains LSB or USB
More power is required for Transmission	Power required is less than that of AM.	Power required is less than AM &DSB-SC

20.Compare AM with DSB-SC and SSB-SC.

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22.How will you generating DSBSC-AM ?

There are two ways of generating DSBSC-AM such as

1.balanced modulator 2.ring modulators

23. What are advantages of ring modulator?

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4. Long life.

24. Define demodulation.

Demodulation or detection is the process by which modulating voltage is recovered from the modulated signal. It is the reverse process of modulation.

25. What are the types of AM detectors?

1. Nonlinear detectors

2. Linear detectors

26.What are the types of linear detectors?

1.Synchronous or coherent detector.

2 .Envelope or non coherent detector.

27.Define super heterodyne principle.

It can be defined as the process of operation of modulated waves to obtain similarly modulated waves of different frequency. This process uses a locally generated carrier wave, which determines the change of frequency.