EXPERIMENT WISE VIVA QUESTIONS

ANALOG COMMUNICATIONS LAB

Amplitude Modulation:

1. What is meant by Modulation? What is the need for modulation?
2. What are different types of analog modulation techniques?
3. What are the other names of message signal? What are the other names of carrier signal?
4. Write the equation of AM signal and explain each parameter in that equation?
5. Define Amplitude Modulation? Define modulation depth or modulation index?
6. What is the range of Audio frequency signals? What is the range of Radio frequency signal?
7. What are the applications of Amplitude modulation?
8. How many generation methods are there to generate an AM wave? What are the methods of demodulation of an AM wave?
9. Explain the operation of diode detector circuit?
10. Write the formula for modulation index? Differentiate under, over and perfect modulation in AM?
11. As the amplitude of message signal increases, modulation index increases or decreases?
12. Define single tone modulation? In laboratory type of AM is single tone modulation or not?
13. Draw the frequency spectrum of AM wave?
14. If modulation index is 100%, calculate the ratio of total power to carrier power of an AM wave?
15. If $\mu=1$ in an AM wave what is the amount of power saving in an AM wave? What is the band width of an AM wave?
16. Explain the operation of AM modulator? Explain the operation of 8038 circuit in AM modulator?
17. Explain the procedure of Amplitude modulation? What is the significance of E_{max} and E_{min} points in AM wave?
18. Plot message, carrier and AM signals?
19. What is meant by envelope detector?
20. The frequency of AM wave follows --- (message signal frequency or carrier frequency)?
21. The amplitude of AM wave at $f_c + f_m$ is--- and The amplitude of AM wave at $f_c - f_m$ is-----
22. In amplitude modulation the amplitude of --------- is changing with respect to ------
23. Envelope of AM signal follows---------- (message signal/ carrier signal)?
24. What are the advantages and disadvantages of AM?
25. How demodulated signal differs from original signal in AM?
26. The two important distortions that can appear in the demodulated output of an envelope detector are---------- and ----------.

27. Differentiate high-level and low-level modulations in AM?
28. What is trapezoidal rule?

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Balanced Modulator:

1. What are the disadvantages of AM?
2. Most of the power in AM spectrum is carried by ----------
3. Define DSBSC modulation?
4. How DSBSC is more efficient than AM in terms power saving, explain?
5. What is meant by frequency response?
6. Draw the magnitude response or amplitude spectrum of DSBSC signal?
7. The signal generated by balanced modulator is----------
8. Draw the wave form of DSBSC wave and AM wave,and differentiate those two waveforms?
9. Give the equation of DSBSC signal?
10. What are the generation methods of DSBSC?
11. What are the demodulation methods of DSBSC?
12. What is the bandwidth of DSBSC signal?
13. Define Costas loop and it's operation?
14. Amount of power saving in DSBSC signal is----------
15. Coherent detection means?
16. Give the practical applications of balanced modulator?
17. Explain the operation of product modulator?
18. Why the circuit is called balanced modulator?
19. If the circuit is operating in balanced state, the modulation index value is----------.
20. Explain the working procedure of 1496 IC for the generation of DSBSC wave?
21. As message signal amplitude increases, carrier suppression in dB's ---------
22. Plot message, carrier and DSBSC waves and explain each wave clearly.
23. How do you differentiate modulation by demodulation?
24. Explain the significance of local oscillator frequency in modulators and in demodulators.
25. Differentiate synchronous and non synchronous detection techniques in analog modulators?
26. The phase shift at zero crossings in DSBSC wave is----------.
27. What is quadrature carrier multiplexing?
28. How DSBSC is different from SSB?

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Frequency Modulation:

1. Define Frequency modulation? How it is different from phase modulation?
2. Write equation of FM wave, explain each parameter in it?
3. Draw the amplitude spectrum of FM wave?
4. Give the Carson's rule in FM?
5. Define modulation index β, frequency deviation?
6. Differentiate Narrow band FM with Wide band FM?
7. Explain the FM operation using 8308IC?
8. Draw message, carrier and FM waves and explain each wave clearly?
9. Explain the methods for generation of FM and its demodulation?
10. How FM wave is different from PM wave?
11. Give the practical applications of FM?
12. State advantages and disadvantages of FM?
13. The range of speech signals is----------.
14. Type of Modulation used in radios is----------.
15. Type of modulation used for voice signals in T.V --- and for video signals in T.V is------.
16. Noise immunity is more in which analog modulation technique----------.
17. FM is more robust to noise compared to AM, why?
18. Carson's rule is for----------.
19. In commercial FM broadcasting, the audio frequency range handled is only upto--------.
20. The transmission band width required for commercial FM broadcasting is----------.
21. Define Hilbert transform?
22. Explain capture effect in FM broadcasting?

EXPERIMENT WISE VIVA QUESTIONS

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Pre-emphasis and De-emphasis:

1. Define pre-emphasis and De-emphasis processes in FM.
2. Why Pre-emphasis is used at Transmitter of FM and de-emphasis at FM receiver?
3. Draw the pre-emphasis circuit and explain its working in detail?
4. Draw de-emphasis circuit and explain its working in detail?
5. Draw the frequency response characteristics of pre-emphasis and de-emphasis explain each one in detail?
6. Calculate the cut-off frequencies of pre-emphasis and de-emphasis circuits practically

7. Pre-emphasis circuit operation is similar to ----------.
8. De-emphasis circuit operation is similar to----------.
9. What is the necessity of boosting up high frequencies in frequency modulation communication system?
10. Define 3dB frequencies?

Sampling and reconstruction:

1. Define sampling theorem? What is the need for sampling?
2. What are the necessary and sufficient condition for sampling and reconstruction of a signal?
3. Define Nyquist rate and Nyquist interval in sampling theorem?
4. If message frequency is 2 KHz and sampling frequency is 2 KHz,4 KHz, 8 KHz and 16 KHz in each case the number of samples are----------.
5. What are different types of sampling techniques?
6. What was the effect on sampled signal if $f_s < 2\ f_m$?
7. Draw the amplitude spectrum of sampled signal if $f_s < 2\ f_m$, $f_s = 2\ f_m$, $f_s > 2\ f_m$.
8. What is aliasing effect in sampling? How to avoid it?
9. Why do we use pre-filtering in sampling?
10. What do you mean by reconstruction of sampling theorem?
11. What are the types of filters used in reconstruction?
12. Define sample and hold process?
13. Differentiate second order, fourth order and sixth order low pass filters in reconstruction process.
14. Explain the sampling and reconstruction process in detail by using the trainer kit.
15. Define band pass sampling?
16. How sampling is different from PAM?
17. Define a continuous time signal or an analog signal. Give some examples of analog signals.
18. Define a discrete time signal. Give some examples of discrete signals.
19. What is the difference between discrete and a digital signal?
20. Define a digital signal? Give some examples.
21. What is the need for converting a continuous signal into a discrete signal.
22. Explain about zero-order hold circuit.
23. How to convert an analog signal into a digital signals?
24. Digital signal processors oprates ----------as inputs.
25. As the number of samples increases, the reconstruction of original signal becomes---------