Aryan College

Analog Circuit and Communication

Unit I: Power Supply and Filters

1. Give diagram of a regulated power supply and name each component? [2017]
2. What is principle of SMPS? [2017,2014]
3. Draw the circuit diagram of half-wave rectifier? [2017]
4. Draw circuit diagram of L-section filter? [2017]
5. Draw the circuit diagram of bridge rectifier and explain its working? [2017]
6. Draw circuit diagram of full wave rectifier and explain its working? Derive expression for its efficiency and ripple factor? [2017]
7. Draw circuit diagram for a π-section filter and explain its working. Derive expression for ripple factor and explain its dependency on load resistance? [2017]
8. Define ripple factor? [2016]
9. Define bandwidth of an amplifier? [2016]
10. Define noise? [2016,2015]
11. Draw the circuit diagram of a bridge rectifier? [2016]
12. Draw the circuit diagram of logarithmic amplifier? [2016]
13. Draw the block diagram of regulated power supply. Explain the principle and working of a switch mode supply? [2016]
14. Draw a circuit of full-wave rectifier? [2015]
15. Define rectification efficiency? [2015]
16. Explain bridge rectifier, draw suitable diagram and wave form? [2015,2013]
17. What is filter and explain all types of filters with circuit diagram? [2015]
18. Write a note on principle and working of SMPS? [2015]
19. What is bridge rectifier? [2014]
20. Draw block diagram of regulated power supply? [2014]
21. What is Full wave Rectifier? Obtain expression for its efficiency, Ripple factor and Regulation? [2014]
22. What is value of ripple factor for half wave and full wave rectifier? [2013]
23. What is role of SMPS? [2014,2013]

Unit II: RC Coupled Amplifier and Feedback

1. What do you mean by feedback? Draw a basic feedback circuit? [2017,2014]
2. What is negative feedback? Explain how negative feedback improves bandwidth? [2017]
3. Explain working of a single stage RC coupled CE amplifier with help of circuit diagram? Analyze its frequency response for mid frequency range? [2017]
4. Define negative feedback? [2016]
5. Define slew rate? [2016]
6. Write an equation to explain the effect of negative feedback on bandwidth of an amplifier? [2016]
7. Draw the circuit diagram of R-C coupled amplifier? [2016]
8. Compare the effect of positive and negative feedback on:- [2016,2014]

a) Gain
b) Bandwidth

c) Noise
d) Input Impedance of an amplifier
e) Output impedance of an amplifier

8. What is R.C. Coupled amplifier? Give analysis and frequency response of single stage RC coupled CE Amplifier? [2014,2013]
9. What is an Amplifier? [2014]
10. Design a feedback network for an non-inverting amplifier. The voltage gain of the feedback network is (1/22)? [2013]
11. Write two differences between series and shunt regulator? [2013]
12. Explain the effect of negative feedback on the input impedance of voltage shunt? [2013]
13. When two diodes are connected back to back with two N-sides is joint together. Can it become a transistor? [2013]
14. Draw electrical circuit model for the double ended differential amplifiers? [2013]
15. Define input bias current, input offset current, input and output offset voltage slew rate? [2013]

Unit III: Operational Amplifiers

1. Define offset voltage for OP-AMP? [2017]
2. Explain virtual ground for OP-AMP? [2017]
3. Define voltage gain of an amplifier in dB unit? [2017]
4. Write five characteristics of an ideal OP_AMP? [2017]
5. Explain the pin diagram of an OP-AMP. Evaluate expression for voltage gain for an inverting amplifier? [2017]
6. Draw circuit diagram of a summing amplifier (adder) using OP-AMP and explain its working? [2017,2014]
7. Draw a diagram of a differentiator circuit? [2016]
8. Draw a diagram to show a triangular and square wave? [2016]
9. What is common mode rejection ratio? Explain. [2016,2014]
10. Define degree of differential equation? [2015]
11. Define Oscillator? [2015]
12. Explain monostable multi-vibrate? [2015]
13. Explain multi-vibrator in detail. Differentiate between oscillators a multi-vibrate? [2015]
14. Explain any three OP-Amp applications in detail? [2015]
15. Explain parameters of OP-Amp? [2015]
16. Define linear voltage regulation? [2015]
17. Write short note on :- [2016]
    a) Frequency response of operational amplifier?
    b) Voltage follower?
    c) Amplitude modulation
    d) Advantages of frequency modulation
    e) Choke input filter
    f) Comparator
    g) Monostable multivibrator
18. Discuss basic operational amplifier's following uses as:- [2016]
    a) Integrator
    b) Series regulators
19. Define Square Law Diode modulator? [2014]
20. What is square wave (a stable) Generator? [2014]

21. What is triangular wave Generator? [2014]
22. What is three terminal regulator? [2014]
23. What is offset voltage? [2014]
24. Define the slew rate (SR) of an op-Amp? [2013]
25. A wein bridge oscillator is used for operate at F_0 = 10KHz. If the value of R is 100KΩ, find the value of the capacitor of the capacitor C? [2013]
26. Explain the use of op-Amp when it is used as : [2013]
    i. Voltage follower
    ii. Summer
27. How to generate the amplitude modulate wave with the help of square law diode modulator? [2013]
28. Describe the working of a comparator along with the suitable schematic diagram? [2013]
29. What is multi-vibrator? Explain the operation of monostable multi-vibrator and draw the o/p voltage wave-form? [2013]

Unit IV: Communication

1. What do you mean by demodulation? [2017,2016,2014]
2. Derive equation for frequency modulated wave? [2017]
3. Draw a diagram to explain the concept of frequency modulation? [2016]
4. What do you understand by phase modulation? Explain. [2016]
5. What do you understand by wave propagation? [2015]
6. The amplitude of AM signal is 5V and that of carrier wave 50. Calculate the percentage of modulation index? [2015]
7. Write any two advantages of modulation? [2015]
8. Explain demodulation of AM? [2015]
9. Define FM? [2015]
10. Discuss relation between PM and FM? [2015]
11. Explain modulation, its types and need? [2015,2014,2013]
12. Explain AM and FM radio receiver using block diagram approach? [2015,2014]
13. What do you mean by Frequency modulation? [2013]
14. Explain in brief the need of modulation? [2013]
15. Explain the difference between frequency and amplitude modulation? [2013]