ANNAI VIOLET ARTS AND SCIENCE COLLEGE
DEPARTMENT OF PHYSICS
Question Bank

Subject : Basic Electronics **Subject Code: SAR5D**
Class : III Yr. B.Sc., **Semester : V**

SECTION A – 2 Mark Questions

1. What is the probability of the electrons from the valence band passing into the conduction band?
2. What are the probabilities of fermi factor F(E) with respect to temperatures?
3. Write any two properties of semiconductors.
4. What is the transient current in a reverse biased P-N junction.
5. Which are the most commonly used semiconductors and why?
6. Define valence band and conduction band.
7. Draw the symbol for npn and pnp transistors.
8. State law of mass action.
9. What is Band gap?
10. What is an intrinsic semiconductor?
11. Which semiconductors are commonly used? Why?
12. What are the essential features of a current amplifier?
13. What are the different modes of operations of a Transistor? Which mode is widely used in amplifiers?
14. What is an extrinsic semiconductor?
15. What are the performance quantities of a power amplifier?
16. Why is collector wider than emitter and base in a transistor?
17. Mention the rules for drawing A.C. equivalent circuit.
18. Draw hybrid model of a two-port network.
19. What is feed back? Mention its types.
20. List the disadvantages of R-C coupled amplifier.
21. A power transistor working in class A operation has zero signal power dissipation of 10 watts. If the a.c output power is 4 watts, find collector efficiency.
22. What is meant by clamping circuit?
23. What is an oscillator?
24. Define input and output resistance of a transistor connected in common base.
25. Mention the properties of semiconductors.
26. Why is negative feedback applied in high gain amplifier?
27. Define current amplification factor of a transistor connected in common base.
28. Write the disadvantages of RC coupled transistor amplifier.
29. What is a power amplifier?
30. State Barkhausen criterion.
31. How the negative voltage feedback improves frequency response of an amplifier?
32. Obtain relations between α and β .
33. What is an oscillatory circuit?
34. What are clipping and clamping?
35. State the conditions for sustaining a steady level of oscillation.
36. Mention the advantages of negative feed back amplifier.
37. Mention the basic condition for the feed back amplifier to act as oscillator
38. What is a monostable multivibrator?
39. Give mathematical explanation of Barkhausen criterion.
40. What are the applications of clippers?

41. What is a monostable multivibrator?
42. Why JFET is called as voltage driven device?
43. What are the applications of clippers?
44. What are clamping circuits? Draw the circuit diagram of positive clamper.
45. Mention any two differences between FET and Transistor.
46. What is a multivibrator? Mention the types.
47. Define drain resistance of a FET.
48. Why monostable multivibrator is called one-shot multivibrator
49. Mention any two differences between FET and transistor.
50. Mention any two advantages of a JFET.
51. Draw the equivalent circuit of SCR.
52. Define break over voltage of an SCR.
53. How SCR is operated as a switch?
54. Define Drain resistance of a FET.
55. Find the value of β if $\alpha = 0.99$ for a transistor.
56. Define amplification factor μ of a FET.

SECTION B – 5 Mark Questions

1. What is extrinsic semiconductor? Explain the formation of n-type semiconductor.
2. What is forbidden energy gap? Give the energy band description of semiconductors
3. Obtain expression to find density of electrons in conduction band of p-type semiconductor.
4. What are P – type and N – type semiconductors? Discuss the shift in Fermi level of P – type and N – type semi conductors.
5. Explain the input and output characteristics of a transistor in common emitter mode.
6. Explain the classification of solids on the basis of energy bands.
7. Explain the circuit operation of push-pull amplifier.
8. What do you understand by h – parameters? Mention their dimensions. Draw the h – parameter equivalent circuit of a linear circuit.
9. Give mathematical analysis of output resistance of common emitter amplifier using hybride parameters.
10. Obtain expression for differentiating circuit.
11. Explain the action of positive clamper.
12. Explain the action of biased clipper.
13. Explain the operation of class-B push-pull amplifier.
14. Describe the action of emitter follower with a neat diagram.
15. With suitable diagram explain the working of a differentiating circuit.
16. Explain the principle of negative feedback in amplifiers
17. Explain the h-parameters of a transistor.
18. Describe the working of a bistable multivibrator.
19. Write short note on phase shift oscillator.
20. Explain the V – I characteristics of a Uni Junction Transistor (UJT).
21. Give the circuit details and operation of emitter follower.
22. Show that the output from a differentiating circuit is derivative of the input.
23. A power transistor working in Class A operation has zero signal power dissipation of 10 watts. If the Alternating Current output power is 4 watts find (a) Collector efficiency (b) Power rating of a transistor
24. Explain the working of class- A power amplifier
25. Explain the working of phase shift oscillator
26. Explain the principle of feedback amplifier

27. Explain how a circuit output voltage is directly proportional to the integral of input.
28. Explain about the experimental determination of FET parameter.
29. Explain the voltage variable resistor (VVR) operations of FET.
30. Give the theory of integrating circuit.
31. Explain the parameters of JFET.
32. Explain V-I characteristics of SCR
33. Explain the operation of positive clamper.
34. Explain the characteristics of UJT.
35. Write short notes on UJT relaxation oscillator.

SECTION C – 10 Mark Questions

1. Describe the behaviour of a PN junction under forward biasing and reverse biasing.
2. What is a pn junction? Explain the formation of potential barrier in a pn junction.c
3. On the basis of band theory explain about (a) Conductors (b) Insulators and (c) Semiconductors.
4. Obtain expression for barrier potential across the PN junction.
5. Draw the circuit diagram of a R.C. coupled amplifier and derive expressions for voltage gain at low, mid and high frequencies.
6. Discuss the behaviour of a PN junction under forward and reverse biasing.
7. Explain the working of the Wien –Bridge oscillator. Obtain an expression for its frequency
8. Analyse common emitter amplifier using h-parameters.
9. Give circuit details and action of emitter follower.
10. Obtain expressions for current gain, voltage gain, input impedance and output impedance of a transistor in common emitter mode using h parameter.
11. Draw a equivalent circuit of CE amplifier and analyse it for current gain, voltage gain and I/O impedance.
12. Write a note on Wien bridge oscillator.
13. Give the circuit details and operations of emitter follower. Explain its D.C. analysis.
14. Give the circuit details and operation of monostable multivibrator.
15. What is a clipping circuit? Describe about positive, negative and biased clipping with suitable circuits.
16. Describe the operation of Wien Bridge oscillator. Mention its advantages and disadvantages.
17. Explain the working of Wien bridge oscillator. Mention its advantages and disadvantages.
18. With a neat sketch explain the working of astable multivibrator.
19. Explain V-I characteristics of SCR. How SCR act as a switch? And mention its advantages over mechanical switch.
20. Explain the working of a bistable multivibrator.
21. Explain the output characteristics of FET. Discuss its parameters.
22. Explain the working and output characteristics of a FET.
23. Describe the construction and working of SCR.
24. Explain how SCR acts as a half wave rectifier with necessary diagram.
25. Draw the equivalent circuit of UJT and discuss its working. How it can be used for producing saw tooth wave?

Prepared by
Dr.M.Prabhaharan-Asst. Prof. & Head.