



KINGS
COLLEGE OF ENGINEERING



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
QUESTION BANK

Sub Code/ Subject: EC1206/Electronic devices & Circuits Year / Sem: II/III

UNIT-1
ELECTRON BALLISTICS AND APPLICATION

PART – A (2 MARKS)

1. What is charged particle? Define the unit of the charge.
2. Define Electric field intensity. State its units.
3. What are the applications of CRO?
4. State the expression for the force experienced by the electron in an electric field.
5. State Coulomb's law
6. What is valence band?
7. What is covalent band?
8. What is forbidden band?
9. Explain semiconductor types?
10. Define energy level and energy band.
11. What is Fermi level?
12. What is a semiconductor?
13. What is meant by electron-hole pair?
14. What is Hall Effect?
15. What is the eV unit of energy?

PART – B

- 1) Explain the force on charged particles in an electric and magnetic field (16)

- 2) Derive and Explain the Electrostatic deflection sensitivity in CRT and magnetic deflection sensitivity in CRT. (16)
- 3) Analysis of parallel and perpendicular electric field and Analysis of parallel and perpendicular magnetic field. (16)
- 4) Explain cyclotron principle and Explain Hall Effect. (16)
- 5) (a) Explain the energy band structure of conductor, semiconductor and insulator. (8)
(b) Explain the type of semiconductor. (8)

UNIT-II
SEMICONDUCTOR DIODES

PART – A (2 MARKS)

1. What is p-type semiconductor?
2. What is doping?
3. What is hole current /electron current?
4. Define law of mass of action
5. What is drift current?
6. What is diffusion current?
7. What is forward and reverse resistance of a diode?
8. What is cut in voltage of a diode?
9. What is switching characteristics of diode?
10. What is Zener break down voltage?
11. Give the expression for transition capacitance of a diode (C_T).
12. What are applications for zener diode?
13. What is tunnel diode?
14. What is valley voltage of tunnel diode?
15. What is peak inverse voltage of a rectifier?

PART – B

- 1) (a) Explain the theory of PN junction and explain how it acts as diode. (8)

- (b) Derive the diode equation of the diode(8)
- 2) Explain and derive the current components and switching characteristics of diode. (16)
- 3) Explain the Zener diode and it's breakdown mechanism. (16)
- 4) Explain the backward diode, p-i-n diode and point contact diode. (16)
- 5) Explain tunnel and varactor diode. (16)
- 6) Explain Photo diode and LED diode. (16)
- 7) Explain schottky barrier and avalanche photo diode. (16)

UNIT – III

BI POLAR JUNCTION TRANSISTORS AND FIELD EFFECT TRANSISTORS

PART – A (2 MARKS)

1. Define Transistor
2. Define transistor action
3. Define delay time
4. Define rise time and fall time.
5. Define turn on and turn off time
6. Define power transistors.
7. Define current amplification factor in CC transistor.
8. What are the values of input resistance in CB, CE & CC configuration?
9. What are the advantages of FET?
10. What is a bias? What is the need for biasing?
11. What do you understand by DC and AC load line?
12. What is meant by operating point Q?
13. What are all the factors that affect the stability of the operating point?
14. Define Stability factor S.
15. Why voltage divider bias is commonly used in amplifier circuits?
16. How FET is known as voltage variable resistor?
17. How self bias circuit is used as constant current source?
18. What is thermal runaway?
19. Why self-bias technique is not used in enhancement type MOSFET?
20. What are handling precautions for MOSFET?

PART – B

1. Explain the operation of BJT and its types? (16)
2. Explain and derive the current components and Eber moll model? (16)
3. (a)Write comparisons of CC, CE, and CB configuration? (8)
(b) Explain the characteristics of UJT using its equivalent circuit? (8)
4. (a)Explain SUS and SCR?(8)

- (b) Write detail about DIAC and TRIAC? (8)
5. Derive MOSFET and explain its depletion and enhancement? (16)
 6. Write CMOS and VMOS? (16)

UNIT-IV
POWER SUPPLY AND POWER AMPLIFIER

PART – A (2 MARKS)

1. Define operating point.
2. What is bias stabilization? Why it is needed in transistor?
3. What are the factor affecting the stability of Q-point?
4. Define stability factor?
5. Which of the transistor circuit is stable? Why?
6. Mention the conditions of proper transistor biasing?
7. In which region the JFET act as a simple resistor and why?
8. What are the types of biasing methods used for BJT biasing?
9. Why FET is called as voltage controlled device?
10. Define the channel width of JFET.
11. Define Base spreading resistance.
12. Write the advantages of N channel MOSFET over P channel MOSFET
13. Write the characteristics of JFET
14. What is pinch off voltage?
15. Why the base bias is not used in amplifier circuit?

PART – B

- 1) Explain various biasing method of BJT? (16)
- 2) Explain the biasing circuits of BJT and its operating point? (16)
- 3) Explain bias stability and stability parameter? (16)
- 4) (a) Explain the biasing method of FET? (8)
(b) Write use of JFET as a voltage variable resistor? (8)

UNIT – V
POWER SUPPLY AND POWER AMPLIFIERS

PART – A (2 MARKS)

- 1) Write types of amplifier based on biasing condition?
- 2) What is class A, B and C amplifier?
- 3) What is regulated power supply?
- 4) What are the benefits of series voltage regulator?
- 5) How monolithic linear regulators are fabricated?

- 6) What are the types of IC voltage regulator?
- 7) What is conversion efficiency?
- 8) Calculate the effective resistance R'_L seen looking into the primary of a 10:1 transformer connected to an output load of 16Ω .
- 9) Calculate the transformer turns ratio required to match a 8Ω speaker load to an amplifier so that the effective load resistance is $7.2\text{ k}\Omega$.
- 10) What are the advantages of class B amplifier compared with class A amplifier?
- 11) What are the advantages of push- pull amplifier?
- 12) What is Harmonic distortion?
- 13) What is intermodulation frequency?
- 14) What is frequency distortion?
- 15) What is phase or delay distortion?
- 16) What is cross over distortion?
- 17) What are the advantages of complementary symmetry push pull amplifier?
- 18) What are the advantages of complementary symmetry push pull amplifier?

PART – B

- 1) (a) Explain the elements of regulated power supply system and stabilization(8)
(b) Write types of regulators and details about voltage regulator (8)
- 2) Explain the classification of power amplifiers? (16)
- 3) Explain RC coupled and transformer(16)
- 4) Explain complementary symmetry push pull power amplifier. (16)
- 5) (a) Explain coupled power amplifier (8)
(b) Explain switching regulated power supply (8)