



KINGS
COLLEGE OF ENGINEERING



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

SUBJECT CODE & NAME : EC 1201 – ELECTRONIC DEVICES

YEAR / SEM : II / III

UNIT - I

PART - A

ELECTRON BALLISTICS AND APPLICATION

1. Define electron volt? (2)
2. State the relationship between electric field intensity, and potential? (2)
3. An e^- beam from rest is accelerated by a potential of 200v. Find the final velocity of the e^- ? (2)
4. What is deflection sensitivity of a CRT? (2)
5. Calculate the time taken by an e^- which has been accelerated through a potential difference of 100 volts to transverse a distance of 2cm.
Given $q = 1.602 \times 10^{-19} \text{ C}$ & $m = 9.1 \times 10^{-31} \text{ kg}$ (2)
6. State two applications of magnetic deflection? (2)
7. What is doping? (2)
8. What is intrinsic and extrinsic semiconductor? (2)
9. What are acceptor & donor? (2)
10. Draw crystal diagram of intrinsic & extrinsic semi conductor? (2)

PART – B

1. With relevant diagrams, write about the motion of an e^- in an electric field & magnetic field? (16)
2. Explain the motion of an e^- in a uniform magnetic field & derive the expressions for the period and angular velocity of a particle? (16)
3. Explain electro static deflection sensitivity and magneto static deflection sensitivity in a CRT? (16)
4. a. What is Hall Effect? Explain its principle and uses?(8)
b. Compare electrostatic & magnet static deflection sensitivity in a CRT?(8)
5. Explain the motion of an e^- in parallel and perpendicular electric and magnetic field with neat diagram?(16)
6. a. What is cyclotron? Explain its principle and uses(4)
b. i) Explain Insulator, Semiconductor with help of Energy band Structure? (6)
ii) How a p – type and n-type semiconductor can be obtained? (6)

UNIT – II

SEMICONDUCTOR DIODES

PART - A

1. How a PN junction can be formed? (2)
2. List out the common diode applications? (2)
3. State mass action law? (2)
4. Define avalanche and zener breakdown? (2)
5. What is tunneling? (2)
6. What are the current components of diode? (2)
7. Define forward recovery time and reverse recovery time? (2)

PART – B

1. Explain the forward and reverse bias operation and VI characteristics of a PN Junction diode. (16)
2. a) Derive the diode current equation? (8)
b) Discuss the current components of PN junction diode? (8)
3. a. Explain any two applications of diode with neat diagram (Clipper & Clamper) (8)
b. Explain the characteristics and applications of Varactor diode? (8)
4. a). Explain the characteristics and applications of zener diode? (8)
b) Explain the mechanism of avalanche and zener break down? (8)
5. Explain the working principle, Characteristics, Applications, advantages & disadvantages of Tunnel diode? (16)
6. Write short notes on the following diodes? (16)
 - i) Backward diode(4)
 - ii) p-i-n diode(4)
 - iii) Point contact diode(4)
 - iv) Photo diode(4)
7. a) Explain the structure, characteristics and applications of Scotty Diode. (8)
b) Explain the switching characteristics of PN junction diode. (8)
8. a). Discuss about the p-i-n photo diode, APD & LED (12)
b) Define diffusion and drift current (4)
9. Explain how conduction takes place in p – type & n – type Semiconductor? (16)

UNIT – III

BJT & FET

PART – A

1. Define pinch - off voltage? (2)
2. Derive the relation between pinch - off voltage & drain current? (2)
3. What is a MOSFET? (2)
4. What is a MESFET? (2)
5. What is VMOS? (2)
6. What is CMOS? (2)
7. What is early effect? (2)

PART - B

1. a. Explain the operation of PNP & NPN transistor? (8)
b. What is transistor? State its types (8)
2. a. Explain the current components of a transistor? (8)
b. Explain the transistor switching time? (8)
3. a) Explain Elber – Moll model (8)
b) Compare CE – CB – CC Configuration? (8)
4. a. Explain the i/p & o/p characteristics (8)
b. What is a FET? State its types? (8)
5. Explain the i/p & o/p Characteristic of CB configuration of a transistor? (16)
6. Explain the i/p & o/p characteristics of CC Configuration of a transistor? (16)
7. Explain the construction & Characteristics of JFET (16)
8. Explain the construction & characteristics of enhancement type MOSFET (16)
9. a. Explain the construction & Characteristics of depletion mode MOSFET? (8)
b. State about the VMOS & CMOS. (8)

UNIT – 4
TRANSISTOR BIASING

PART – A

1. What is operating point (or) Q point (or) bias point (or) quotient point? (2)
2. What are the various biasing methods of BJT? (2)
3. What is need for biasing? (2)
4. What is biasing stability? (2)
5. What are the factors that affect the stability of the Q-point? (2)
6. What are the biasing methods of FET? (2)
7. Derive the fixed bias technique, self-bias & voltage divider bias of JFET? (2)
8. Express the relation between I_c , I_{cbo} & β ? (2)
9. In which region transistor has to be operated to act as a) Switch b) an amplifier (2)
10. Define early effect? (2)
11. Define a) DC load line b) AC load line (2)
12. What is reverse saturation current? (2)
13. What is thermal runaway? (2)
14. What can we analyze from a load line? (2)
15. Derive the stability factor? (2)

PART - B

1. What are the applications of JFET? Explain JFET as VVR. (16)
2. Prove that the voltage divider biasing provides better stability than other techniques? (16)
3. a) Why fixed biased circuit is not used in practice? (8)
b) Derive the stability factor? (8)
4. a) Discuss about the Q-point where to be placed? (8)
b) Explain the use of JFET as a voltage variable resistor (VVR)? (8)
5. a) Derive the relation between α , β and γ ? (8)
b) Compare FET & BJT? (8)

UNIT – 5

POWER SUPPLY & POWER AMPLIFIER

PART – A

1. What are the basic elements of regulated power supply? (2)
2. What is ripple factor? (2)
3. What is a rectifier? (2)
4. Define regulation of a rectifier? (2)
5. Define efficiency of a rectifier? (2)
6. What is a filter and state its types? (2)
7. What is SMPS? (2)
8. Define intrinsic stand-off ratio? (2)
9. What is a regulator and state its types? (2)

PART – B

1. a) Explain the series & shunt voltage regulators? (8)
b) State short notes on PUT & PNP diode? (8)
2. Explain the block diagram of SMPS & its operation with neat sketch? (16)
3. Write short notes on SUS, SCR, DIAC, TRIAC? (16)
4. Explain the operation & characteristics of DIAC? (16)
5. Explain two transistors model of SCR? (16)
6. Explain the operation & characteristics of TRIAC? (16)
7. a) Explain the zener voltage regulators? (8)
b) Explain the monolithic linear regulators? (8)
8. Explain the principle of operation & characteristics of UJT? (16)