Course Code & Course Name : 23Eb202/ ELECTRO DEVICES AND CIRCUITS

Year/Sem : II/III

Unit-I: Applications of Semiconductor Devices

Part-A (2 Marks)

1. Differentiate between zener breakdown and avalanche breakdown.
2. What is meant by diffusion current in a semi conductor?
3. Elucidate ripple factor and TUF.
4. Define transition capacitance and mention the mathematical expression for it.
5. Write the equation for diode current under reverse bias.
6. Define Knee voltage & peak inverse voltage in a diode.
7. What is depletion region in PN junction?
8. Explain barrier potential.
9. State the principle of operation of an LED & Give the advantages of LED.
10. Give the effect of Temperature on PN Junction diode?

Unit II: Transistors

Part A (2 Marks)

1. In a CB connection, the value of I_E is 6.28 mA and the collector current I_C is 6.20 mA. Determine DC current gain.
2. Name the operating modes of a transistor.
3. Which of the BJT configuration is suitable for impedance matching applications? Why?
4. Elucidate thermal run away.
5. State the biasing conditions required for the three regions of operation of a BJT.
6. Give any two differences between E-MOSFET and D-MOSFET.
7. Compare JFET with BJT.
8. What are the special features of FET?
9. Characterize: (a) Pinch off voltage and (b) Amplification factor in JFET.
10. Define R_d, g_m and μ of JFET.

Unit III: Amplifiers

Part A (2 Marks)

1. Draw the h-parameter equivalent circuit of a CE BJT configuration.
2. What are hybrid parameters?
3. Sketch the small signal equivalent circuit of FET.
4. Define Miller's theorem.

5. Describe Bandwidth.
6. What do you mean by amplifier rise time?
7. Define lower & upper cut off frequencies of an amplifier.
8. Characterize small signal equivalent circuit.
9. Give the salient features of hybrid parameters.
10. What is an amplifier & which amplifier is called as voltage follower?

Unit-IV: Multistage Amplifiers and Differential Amplifier

Part A (2 Marks)

1. Why we go for differential amplifier?
2. Define CMRR & State the various methods of improving CMRR.
3. Explain the bootstrapping technique.
4. Illustrate the coupling methods used for coupling in multistage amplifiers?
5. Enumerate tuned amplifiers & its types.
6. Mention the applications of class C tuned amplifier.
7. What is Neutralization? Give its types.
8. Characterize the following modes of operation (a) Class AB (b) Class C.
9. Define cross over distortion & conversion efficiency of a power stage.
10. Write down the values of maximum possible power conversion efficiency for class A direct coupled and transformer coupled.

Unit-V: Feedback Amplifiers and Oscillators

Part A (2 Marks)

1. List the advantages of negative feedback amplifiers.
2. Mention any two high frequency LC oscillators.
3. What is meant by feedback? types
4. Define feedback factor β.
5. Formulate the barkhausen criterion for the feedback oscillators.
6. Give the expression for gain of an amplifier with feedback.
7. Compare LC oscillators and crystals oscillators.
8. Differentiate oscillator and amplifier.
9. Write down the general applications of oscillators.
10. Express the frequency of oscillations for a Wein bridge oscillator.