

BTEIPE405 C : Industrial Electronics

Unit I

1. Draw construction symbol and circuit symbol of NPN and PNP transistor.
2. State different configurations of transistor
3. Draw and explain VI characteristics of CB transistor amplifier
4. Draw and explain VI characteristics of CE transistor amplifier
5. Draw and explain VI characteristics of CC transistor amplifier
6. Differentiate between CB CE CC with parameters
7. Define stability factors of a transistor operated at Q-Point?
8. What is power amplifier? Explain with neat block diagram.
9. Define α , β and γ with respect to transistor configuration. State the relation between α and β .
10. Draw the circuit diagram of fixed bias. Why it is called as fixed bias.
11. Draw and explain the circuit diagram of collector bias.
12. Draw and explain the circuit diagram of voltage divider bias
13. State different types of power amplifier.
14. Draw and Explain circuit of class A power amplifier.
15. Draw and Explain circuit of class B power amplifier.
16. Draw and Explain circuit of class AB power amplifier.
17. Draw and Explain circuit of class C power amplifier.
18. State different applications of power amplifier.
19. Define
 - A. stability factor
 - B. efficiency of power amplifier.
20. What is the effect of base current I_B on collector current I_C with reference to characteristics?
21. Differentiate between class A and class AB amplifier on the following basis
 - i. Collector current waveforms
 - ii. Position of Q point on the Load Line
 - iii. Distortion in output voltage
 - iv. Efficiency

Unit –II

1. Define. OP-AMP
2. What is CMRR
3. Enlist various packages of IC
4. Define i. Input offset current ii. Input offset voltage.
5. Define input bias current and output offset voltage

6. Derive an expression for gain in an inverting mode amplifier using op-amp with feedback.
7. Derive an expression for gain in non-inverting mode amplifier using op-amp with feedback.
8. Derive an expression for Integrator using op-amp
9. Derive an expression for Differentiator using op-amp
10. Derive an expression for Voltage to current converter using op-amp
11. Derive an expression for Current to voltage converter using op-amp
12. Explain Basic comparator using Op-Amp with neat Circuit diagram and waveform.

Unit III

1. Draw construction symbol and circuit symbol of
 - a. SCR
 - b. TRIAC
 - c. DIAC
 - d. UJT
 - e. IGBT
 - f. MOSFET
2. Enlist Power devices used in Industrial Electronics.
3. What is SCR? Explain its operation with neat circuit diagram
4. Draw and explain VI characteristics of SCR.
5. Explain operation of DIAC with neat circuit diagram
6. Explain operation of TRIAC with neat circuit diagram
7. Explain operation of UJT neat circuit diagram
8. Draw equivalent circuit of SCR using transistors.

Unit IV

1. What do you mean by logic gate? State different types of basic logic gates.
2. Draw circuit symbol of following logic gates and state logic equation and truth table of it
 - a. AND Gate
 - b. OR Gate
 - c. NOT Gate
3. Which are different Universal logic gates? Draw symbol and truth table of 2 input single output universal logic Gates.
4. State following laws of binary operation
 - a. Commutative
 - b. Distributive
 - c. Associative
5. Prove Demorgan's Theorem's with logic gate and truth table for two input logic expression.

6. Perform binary subtraction using 2's Complement method $(48)_{10} - (23)_{10}$
7. What is K-map? State its uses to solve Boolean expression.
8. What do you mean by SOP and POS?
9. Explain Min term and Max term also draw table for min term and max term of 0 to 15 binary numbers.
10. How we can implement AND NOT an OR operation using NAND gate?
11. How we can implement AND NOT an OR operation neither using NOR gate?
12. State BCD code for following decimal numbers.
 - a. 15
 - b. 64
 - c. 88
 - d. 22

Unit V

1. State the significance of parity bit.
2. What is Multiplexer? State pin number of ICs of Multiplexer.
3. What is De-multiplexer? State pin number of ICs of De-multiplexer.
4. What do you mean by encoder?
5. What do you mean by decoder?
6. Verify the operation of half subtraction using combinational logic circuit design.
7. What is flip-flop?
8. Explain S-R Flip-flop with conditional input set and reset.
9. Write a short note on Hazardous in combinational circuits.
10. What is shift register Explain?
11. Explain concept of counters in digital electronics.
12. State Difference between Multiplexer and De-Multiplexer