34044 – Linear Integrated Circuits

1. INTRODUCTION TO OPERATIONAL AMPLIFIERS

Part-A

1. Draw the Symbol of an Operational amplifier?
2. What is IC?
3. What are the types of Packages?
4. Define Slew rate?
5. What is Sign changer?
6. What is Scale changer?
7. What is the unit of Slew rate?
8. What is Operational amplifier?
9. What is the Voltage gain of non-inverting amplifier?

Part-B

1. Write the characteristics of ideal Op-Amp?
2. What is the difference between virtual ground and ordinary ground?
3. Write the advantages of IC over discrete components?
4. Mention any two types of IC Packages?
5. Mention any two Characteristics of ideal operational amplifier?
6. Define CMRR and slew rate?
7. Draw the pin diagram of IC 741?
8. What is Virtual ground?

Part-C

1. Explain inverting amplifier and non-inverting amplifier using operational amplifier?
2. Explain differential amplifier and sign changer using operational amplifier?
3. What are the characteristics of an ideal Op-Amp? Explain them.
4. (i) Draw the Block diagram of Op-Amp and explain? (ii) Explain virtual ground?
5. (i) Explain CMRR and slew rate? (ii) Explain the equivalent circuit of Op-Amp?
6. What is differential amplifier? Explain how Op-Amp used as differential amplifier?

2. OP AMP APPLICATIONS

Part-A

1. What is comparator?
2. What is summing amplifier?
3. Mention the types of waveform generators by using operational amplifier?
4. What is divider?
5. Define differentiator?
6. Draw the triangular waveform?
7. When comparator output will be high and when comparator output will be low?
8. What is meant by voltage follower?
9. Draw the circuit diagram of Zero cross detector?

Part-B

1. Draw an Op-Amp circuit to multiply the input signal by 2?
2. Explain current to voltage converter?
3. Draw an operational amplifier circuit to divide the input signal by 2?

4. What is voltage follower? Explain.
5. Explain the working of summing amplifier?
6. What is voltage to current converter?

Part-C

1. Explain operational amplifier as (i) summing amplifier (ii) Zero crossing detector?
2. With neat diagram, explain the operation of sawtooth wave generator?
3. Write short notes on: (i) Multiplier (ii) Zero crossing detector?
4. Explain the operation of Op-Amp as square wave generator with diagram?
5. Explain the operation of Op-Amp as instrumentation amplifier with diagram?
6. With neat diagram, explain the operation of triangular wave generator?
7. Briefly explain the operation of voltage to current converter and current to voltage converter?

3. PLL & APPLICATIONS

Part-A

1. What is VCO?
2. Define lock range in PLL?
3. What is the use of LPF in PLL?
4. What are the basic building blocks of PLL?
5. Define Capture range?
6. What is LPF?
7. Give the applications of PLL?
8. What is IC 566?
9. List out the basic components of PLL?

Part-B

1. Draw the pin diagram of PLL 565?
2. Write the basic principles of PLL?
3. Draw the pin diagram of IC VCO 566?
4. Explain how PLL is used as frequency translator?
5. Define capture range and lock in range and pull in time?
6. Draw basic block diagram of VCO 566?
7. Expand VCO?

Part-C

1. Explain: (i) Phase detector (ii) LPF?
2. Explain frequency translation and frequency multiplication using PLL with diagram?
3. Explain: (i) Phase detector (ii) VCO?
4. (i) Draw the block diagram of VCO 566 and explain? (ii) Draw the pin diagram of PLL 565?
5. Briefly explain any two applications of PLL?
6. Briefly explain the basic components of PLL?
7. Draw the block diagram of PLL and explain each block?
8. Explain the pin and block diagram of VCO 566 with diagram?

4. D/A AND A/D CONVERTERS

Part-A

1. What is analog to digital conversion?
2. Define accuracy in DAC?
3. What is sampling?
4. What is digital to analog convertor?
5. Define monotonocity in DAC?
6. Define quantization?
7. Define resolution?
8. What is the function of sample and hold circuit?
9. Define resolution of ADC?

Part-B

1. Write the types of ADC?
2. What is the difference between weighted resistor DAC and R-2R ladder type DAC?
3. Define any three specifications of ADC?
4. Why do we need ADC?
5. Define resolution and accuracy of DAC?
6. Explain sample and hold circuit?
7. Mention any two types of ADC?

Part-C

1. Explain 4 bit weighted resistor DAC with a neat diagram?
2. Explain the working of successive approximation type ADC?
3. Explain ramp type A/D converter?
4. With neat diagram, explain dual slope ADC?
5. (i) Draw the block diagram of IC ADC 0808? (ii) Explain quantization?
6. Explain: (i) sample and hold circuit (ii) Quantization
7. Draw the circuit diagram of R-2R ladder D/A converter and explain its operation?

5. SPECIAL FUNCTION ICs

Part-A

1. What is IC 555?
2. What is 78xx IC?
3. What is IC 723?
4. What is regulator?
5. What is Astable Multivibrator?
6. Define voltage regulator?
7. What is the output frequency of Astable Multivibrator?
8. Draw IC 78xx regulator?

Part-B

1. Explain negative voltage regulator using IC 79xx?
2. Draw the pin diagram of IC LM723?
3. Draw the pin diagram of IC 555 timer?
4. Give two applications of IC 555?

Part-C

1. Explain Astable Multivibrator using 555 IC?
2. Explain voltage regulator using IC 78xx and 79xx?
3. Explain positive voltage regulator and negative voltage regulator using IC 78xx and 79xx?
4. With neat diagram, explain the operation of Schmitt trigger using IC 555?
5. Explain the operation of low voltage and high voltage regulators using IC 723?
6. Draw the block diagram of IC 555 and explain each block?
7. Explain the operation of Monostable Multivibrator with its circuit diagram?
8. Explain the operation of LM723 as low voltage regulator with its circuit diagram?