



MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)

Rasipuram - 637 408, Namakkal Dist., Tamil Nadu.

Department of Electrical and Electronics Engineering Question Bank - Academic Year (2021-22)

Course Code & Course Name : 19EEEC03 & Linear Integrated Circuits

Name of the Faculty : Mr.R.Suresh

Year/Sem/Sec : II/III/A

Unit - I: Characteristics of Opamp

Part-A (2 Marks)

1. List the ideal characteristics of an op-amp.
2. What are the factors that affect the stability of an opamp?
3. Mention some applications of op-amp
4. What is negative feedback in Op-amp?
5. What are the various methods available for frequency compensation?
6. Define the parameter slew rate as applied to an op-amp
7. What is OPAMP?
8. List out the ideal characteristics of OPAMP?
9. What are the assumptions made from ideal opamp characteristics?
10. Mention some linear and non-linear applications of opamp.
11. Define input offset voltage.
12. Define thermal drift.

Part-B (16 Marks)

1. List the six characteristics of an ideal op-amp and explain in detail. Give the practical op-amp equivalent circuit (16)
2. Explain briefly about how an operational amplifier is used as inverting Amplifier. (16)
3. Explain the A.C characteristics of an OPAMP (16)
4. Explain the D.C characteristics of an OPAMP. (16)
5. Explain briefly about how an operational amplifier is used as Non inverting Amplifier. (16)

Unit - II: Applications of Operational Amplifier

Part-A (2 Marks)

1. Define CMRR..
2. What is summing amplifier?
3. Draw the voltage follower circuit of an op-amp
4. Draw an integrator using op-amp.
5. Define slew rate.
6. What is Clamper?
7. What is clipper?
8. Draw an differentiator using op-amp
9. What is differential amplifier?
10. Write the application of filter
11. List out the different types of filters?
12. What is the difference between positive and negative clippers?
13. List the types of clippers.

Part-B (16 Marks)

1. Explain in detail of a basic differential amplifier. (16)
2. Draw the circuit diagram of op-amp integrator and derive an expression for the output in terms of the input. (16)
3. Draw the circuit diagram of op-amp differentiator, and derive an expression for the output in terms of the input.. (16)
4. Explain the working principle of a emitter coupled differential amplifier and derive for CMRR (16)
5. Analyze the low pass Butterworth filters (16)

Unit III- Waveform Generator

Part-A (2 Marks)

1. What are the conditions for oscillation?
2. What is the difference between a sawtooth wave and a triangular wave?
3. What is the most important application of a Schmitt trigger circuit?
4. What are the requirements for producing sustained oscillations in feedback circuits?
5. . Draw the equivalent circuit of crystal oscillator
6. What are the types of feedback oscillators?
7. What are the classifications of Oscillators?
8. Define barhausen criterion
9. What is Schmitt trigger?
10. What is window detector?

Part-B (16 Marks)

1. Explain any one sine wave generator and derive the necessary equation for it (16)
2. With neat circuit, explain the operation of Schmitt trigger (16)
3. Explain briefly about triangular wave generator (16)
4. Explain in detail the RC phase shift oscillator (16)
5. With neat sketch, explain briefly about the Wien bridge oscillator (16)
6. Explain in detail the working of saw tooth wave generator (16)
7. Draw the circuit of square wave generator and explain in detail (16)

Unit IV - D/A & A/D Convertors and Phase Locked Loop

Part-A (2 Marks)

1. Define capture range of PLL.
2. Name two application of PLL.
3. Define VCO.
4. Define Pull-in time
5. List the basic building blocks of PLL
6. List the types of analog to digital converter
7. Define sample period and hold period
8. Draw the block diagram of sample and hold circuit
9. Mention the applications of PLL
10. Define lock-in range

Part-B (16 Marks)

1. Explain the various types of analog to digital converter in detail (16)
2. Explain working of PLL using appropriate block diagram (16)
3. Explain operating principles, applications of PLL (16)
4. Explain working of VCO using appropriate block diagram (16)
5. Write short notes on
 - i) Capture range (5)
 - ii) Lock in range (5)
 - iii) Pull in time (5)

Unit V – Special ICs

Part-A (2 Marks)

1. Draw the pin diagram of IC555 timer.
2. What are the applications of 555 timer?
3. List the basic blocks of IC 555 timer.

4. Derive ripple rejection with respect to voltage regulator
5. Define line regulation.
6. What is a switching regulator?
7. What is a linear voltage regulator?
8. Define line regulation.
9. Draw the block diagram of IC Voltage regulator
10. Infer load regulation.
11. What is meant by current limiting?
12. Write the advantages of switching regulators?

Part-B (16 Marks)

1. Explain the functional block diagram of 555 timer (16)
2. Draw the block diagram of an Astable multivibrator using 555 timer and derive an expression for its frequency of oscillation. (16)
3. Draw the block diagram of monostable multivibrator using 555 timer and derive an expression for its frequency of oscillation. (16)
4. Draw and explain the functional block diagram of a 723 regulator. (16)
5. Explain the operation of switching regulators. Give its advantages. (16)
6. Explain the operation of variable voltage regulators with necessary diagrams (16)

Course Faculty

HoD