

PANDIAN SARASWATH YADAV ENGINEERING COLLEGE
ARASANOOR-SIVAGANGAI.
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
EC6404-linear integrated circuits
16 MARK UNIVERSITY QUESTIONS WITH KEY
UNIT-1

1. Draw and explain about the equivalent circuit of OP-AMP.(May 2010)

Definition

Circuit Diagram

Analysis

2. Explain about DC characteristics of OP-AMP. (May 2010)

Input Bias Current

Input Offset Current

Input Offset Voltage

Thermal Drift

3. explain about Widlar current source. (May/June 2010)

Definition

Circuit Diagram

1. Expressions

4. What is current mirror? Explain(May 2010)

1. Definition

2. Current Mirror Circuit

3. Analysis

5. Discuss in detail about AC performance characteristics of an op-amp. (May 2010)

Frequency Response

Stability Of An Op Amp

6. Define CMRR. Draw the circuit of an Op-amp differential amplifier and give the expression for CMRR. (Marks 8) (April/May 2010)

Definition

Circuit Diagram

Analysis

CMRR Expression

7. Define Slew Rate. Explain the cause of slew rate and derive an expression for Slew rate for an op-amp voltage follower. (Marks 8)(April/May 2010)

Definition

Cause Of Slew Rate

Analysis

Expression

8. Draw the circuit diagram of the output stage of the IC 741 OP AMP and

explain its operation with clearly indicating the protection mechanisms indicated. [Marks 16] (Nov/dec 2010)

Ic 741 Op Amp
Circuit Diagram Of Output Stage
Analysis
Protection Mechanisms

UNIT-II

1. How op-amp can be used as an anti log amplifier?(May 2010)
Op Amplifiers
Anti Log Amplifiers
2. Explain briefly about op-amp integrator. (May/June 2010)
Definition
Circuit Diagram
Analysis
Expression
3. Draw and explain about voltage to current converter.(May/June 2010)
V-I Converter
Circuit Diagram
Analysis
V-I Expression
4. With neat circuit diagram explain about instrumentation amplifier. (May/June 2010),(Dec 09)
Definition
Features
Circuit Diagram
Analysis
Circuit Diagram
5. Design a first order Low-pass filter for cut-off frequency of 2 KHz and pass-band gain of 2. (Marks 8) (April/May 2010)
First Order Low-Pass Filter
Cut-Off Frequency Of 2 Khz
Design.
6. Explain a positive clipper circuit using an Op-amp and a diode with neat diagrams. (Marks 8)(April/May 2010)
Definition
Positive Clipper Circuit
Op-Amp And A Diode
Circuit Diagram
Analysis

7. Draw and explain a simple Op-amp differentiators. Mention its limitations. Explain with a neat diagram how it can be overcome in a practical differentiators. Design an Op-amp differentiators that will differentiate an input signal with maximum frequency $f_{100\text{Hz max}} = 100\text{Hz}$. (Marks 8) (April/May 2010)

Definition

Limitations

Circuit Diagram

Analysis

8. With relevant circuits, explain the following applications of OPAMP

(i) Voltage to current converters – circuit diagram, analysis

(ii) Multiplier – circuit diagram, analysis [Marks 16] (Nov/Dec 2010)

9. Explain the steps involved in the design of a band pass filter using OPAMP. (Nov/Dec 2010)

Definition

Design

10. Write a note on Schmitt trigger. [Marks 16] (Nov/Dec 2010)

Definition

Circuit Diagrams

Analysis

11. Explain the functions of all the basic building blocks of an Op-Amp. (Marks 8) (April/May 2010)

Input Differential Amplifier

Intermediate Block

Buffer And Level Translator

Output Stage

12. Explain the application of OPAMP as

(1) integrator

Definition

Circuit Diagram

Analysis

(2) differentiators.

Definition

Circuit Diagram

Analysis (Marks 8) (April/May 2010)

13. Design and explain triangular wave generator using Schmitt trigger and integrator circuit. (Marks 16) (April/May 2010)

Definition

Triangular Wave Generator

Circuit Diagrams

UNIT-III

1. Describe the application of PLL. (May 2010)

Frequency Multification/Division

Frequency Translation

Am Detection

Fm Demodulation

Fsk

2. Explain about the gilbert multiplier cell.(May 2010)

Defintion

Circuit Diagram

Analysis

3. Derive the expression for voltage to frequency conversion factor. (May 2010).

Definition

Derive V-I Conversion Factor

Expression

4. With neat diagram explain the operating principles of PLL.(May/June 2010)

Definition

Basic Building Blocks

Circuit Diagram

Analysis

Lock In Range

Capture Range

5. With a neat diagram explain the variable trans conductance technique in analog multiplier and give its output equation. (Marks 8)(April/May 2010)

Definition

Circuit Diagram

Analysis

6. Briefly explain the working of voltage controlled oscillator. (Marks 8)(April/May 2010)

Definition

Circuit Diagram

Analysis

7. What are important building block of phase locked loop (PLL) explain its Working? (Marks 16) (April/May 2010)

Phase Detector/Comparator

A Low Pass Filter

Error Amplifiers

Vco

8. Draw the functional block schematic of a NE565 PLL and explain the roles of the low pass filter and VCO. Derive the expression for the capture range and lock in range of the PLL. [Marks 16] (Nov/Dec 2010)

Definition

Ic PLL 565

Block Diagram

Derivation Of Lock In Range

Derivation Of Capture Range

9. With suitable block diagram, explain the operation of 566 voltage controlled oscillator. Also derive an expression for the frequency of the output waveform generated. [Marks 16] (Nov/Dec 2010)

Definition

Ne/Se 566 Vco

Block Diagram

Derive An Expression Of Frequency

UNIT-IV

1. Explain the operation of successive approximation type A/D converter, (May /June 2010), (Dec 2009)

Definition

Operation

2. Briefly explain about dual slope A/D converter. (May 2010)

Definition

Operation

Analysis

3. What is delta sigma modulation? Explain the A/D conversion using delta modulator. (Dec 2009)

Definition

Operation

Analysis

4. Explain the working of R-2R ladder DAC. (Marks 8) (April/May 2010)

definition

operation

analysis

5. What is a sample and hold circuit? Briefly explain its construction and application. (Marks 8) (April/May 2010)

definition

Operation

Analysis

Application

6. Describe the operation of dual slope and successive approximation type ADC. What are the advantages of dual slope ADC? [Marks 16] (Nov/Dec 2010)

Definition

Operation

Analysis

Advantage

7. Explain voltage mode and current mode operations of R-2R ladder type DAC. (Nov/Dec 2010)

Definition

Operation

8. Explain the following characteristics of ADC resolution, accuracy, settling time, linearity. (Marks 8) (April/May 2010)

Resolution

Accuracy

Settling time

linearity.

UNIT-V

1. Explain the operation of op amp as multi vibrator. (May 2010)

Definition

Operation

Block Diagram

Analysis

Application

2. Write short notes on operation of function generator. (May 2010)

Definition

Operation

Block Diagram

Analysis

3. Write short notes on (MAY/JUNE 2010)

(i) Tuned amplifiers

Definition

Operation

Analysis

(ii) Power amplifiers

Definition

Operation

Analysis

4. Explain in detail about the function of 555 timer in monostable and derive the expression for frequency of oscillation. (MAY/JUNE 2010)

Definition

Operation Of 555 Timer

Analysis

Expression For Frequency Of Oscillation.

5. Explain the operation of switching regulator.(DEC 2009)

Operation

Block Diagram

Analysis

6. Explain the functional diagram of LM 380 power amplifier.(DEC 2009)

Definition

Operation Of Lm 380

Block Diagram

Analysis

Application

7.How is voltage regulators classified? Explain a series voltage regulator. (Marks 8) APRIL/MAY 2010

Definition

Operation

Analysis

Application

8. What is an op to coupler? Briefly explain its characteristics. (Marks 8) APRIL/MAY 2010

Definition

Characteristics

Analysis

9. How can the current drive capability be increased while using three terminal voltage regulators? (nov/dec 2010)

Definition

Operation Of Terminal Voltage Regulators

Analysis

10.Describe the working of IC723 voltage regulator and explain the importance of current limiting techniques. [Marks 16] (nov/dec 2010)

Definition

Operation Of Ic723 Voltage

Current Limiting Techniques

Analysis

11.With a neat diagram, explain working principle of switch mode lower supply.(Marks 16) (April/May 2010)

Definition

Operation

Analysis

12. Write brief notes on:

(i) IC MA 78 40

Definition

Operation

Analysis

(ii) Op to coupler.(Marks 16) (April/May 2010)

Definition

Operation

Analysis