



KINGS

COLLEGE OF ENGINEERING



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
ACADEMIC YEAR 2010-2011 / EVEN SEMESTER**

QUESTION BANK

SUBJECT CODE & NAME: EC1260 Linear Integrated Circuits and Applications
YEAR / SEM: II / IV

UNIT-I

IC FABRICATION

PART-A

1. Define an Integrated circuit.
2. What are the basic processes involved in fabricating ICs using planar technology?
3. List out the steps used in the preparation of Si – wafers.
4. Write the basic chemical reaction in the epitaxial growth process of pure silicon. The basic chemical reaction in the epitaxial growth process of pure silicon is the hydrogen reduction of silicon tetrachloride.
5. What are the two important properties of SiO₂?
6. Explain the process of oxidation.
7. What is meant by molecular beam epitaxy (MBE)?
8. What are the advantages of Molecular Beam Epitaxy (MBE)?
9. What are oxidation induced defects in semi conductor?
10. What is bird's beak?
11. What are isotropic & anisotropic etching processes?
12. Define diffusion.
13. What is dielectric isolation?
14. What are the advantages of ion implantation technique?
15. What is metallization?

LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

PART-B

1. With neat diagram explain the steps involved in the fabrication of the circuit shown in figure using IC technology. (16)
2. Explain in detail about monolithic IC technology. (16)
3. Write notes on
 - (i) Epitaxial growth
 - (ii) Masking & Etching Process(16)
4. Explain how a monolithic capacitor can be fabricated. (16)
5. Explain how a monolithic diode can be fabricated (16)

UNIT-II

CHARACTERISTICS OF OPAMP

1. What are the advantages of ICs over discrete circuits.?
2. What is OPAMP?
3. Draw the pin configuration of IC741.
4. List out the ideal characteristics of OPAMP?
5. What are the different kinds of packages of IC741?
6. What are the assumptions made from ideal opamp characteristics?
7. Mention some of the linear applications of op – amps:
8. Mention some of the non – linear applications of op-amps:-
9. What are the areas of application of non-linear op- amp circuits?
10. What happens when the common terminal of V_+ and V_- sources is not grounded?
11. Define input offset voltage.
12. Define input offset current. State the reasons for the offset currents at the input of the op-amp.
13. Define CMRR of an op-amp.
14. In practical op-amps, what is the effect of high frequency on its performance?
15. What is the need for frequency compensation in practical op-amps?
16. Define slew rate.
17. Why IC 741 is not used for high frequency applications?

LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

18. What causes slew rate?
19. Define thermal drift.
20. Define supply voltage rejection ratio (SVRR)

PART-B

1. Explain in detail of a basic differential amplifier. (16)
2. Draw the circuit diagram of op-amp differentiator, integrator and derive an expression for the output in terms of the input. (16)
3. Explain in detail about voltage series feedback amplifier. (16)
4. Derive the gain of inverting and non-inverting. (16)
5. Explain and derive the condition for DC-characteristics of an operational amplifier. (16)

UNIT III

Applications of Op Amp

1. What is the need for an instrumentation amplifier?
2. List the features of instrumentation amplifier:
3. What is a comparator?
4. What are the applications of comparator?
5. What is a Schmitt trigger?
6. What is a multivibrator?
7. What do you mean by monostable multivibrator?
8. What is an astable multivibrator?
9. What is a bistable multivibrator?
10. What are the requirements for producing sustained feedback circuits?
11. What are the different types of filters?
12. List the broad classification of ADCs.
13. List out the direct type ADCs.
14. What is a sample and hold circuit? Where it is used?
15. Define sample period and hold period.

PART-B

LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

1. Explain the working of an instrumentation amplifier with a circuit. Give its characteristics and applications (16)
2. Explain the working of any one of sinusoidal oscillators. (16)
3. Explain the working of schmit trigger. (16)
4. Explain the R-2R ladder type DAC. (16)
5. Explain how a comparator can be used as a zero crossing detector. (16)
6. Draw the circuit of a first order and second order butter worth active low pass filter and derive its transfer functions. (16)

UNIT IV

Special ICs

1. What are the applications of 555 Timer?
2. List the applications of 555 timer in monostable mode of operation:
3. List the applications of 555 timer in Astable mode of operation:
4. Define 555 IC?
5. List the basic blocks of IC 555 timer?
6. List the features of 555 Timer?
7. Define duty cycle?
8. Define VCO.
9. What do u mean by PLL?
10. Define lock range.
11. Define capture range.
12. Define pull-in time.
13. List the applications of 565 PLL.
14. What are the two types of analog multiplier Ics?
15. What is ICAD 533?
16. List the features of ICAD533.

PART-B

1. Explain the functional block diagram of 555timer. (16)
2. Explain working of PLL using supppropriate block diagram and explain any one application of the same. (16)
3. Draw the block diagram of an Astable multivibrator using 555timer and derive an expression for its frequency of oscillation. (16)
4. Draw the block diagram of monostable multivibrator using 555timer and derive an expression for its frequency of oscillation. (16)
5. write short notes on
 - i) capture range

- ii) Lock in range
 - iii) Pull in time
- (16)

UNIT V Application ICs

1. What is a voltage regulator?
2. Give the classification of voltage regulators:
3. What is a linear voltage regulator?
4. What is a switching regulator?
9. Define line regulation.
10. Define load regulation.
11. What is meant by current limiting?
12. Give the drawbacks of linear regulators:
13. What is the advantage of switching regulators?
14. What is an opto-coupler IC?
15. What are the types of optocouplers?
16. Give two examples of IC optocouplers?
17. Mention the advantages of opto-couplers:
18. Mention the advantages of opto-couplers:
19. What is an isolation amplifier?
- . What are the features of isolation amplifier?
21. What is LM380?
22. What are the features of MA78s40?

PART-B

1. Explain i) Oscillation amplifier.
ii) Voltage regulator (16)
2. Draw and explain the functional block diagram of a 723 regulator. (16)
3. Draw the block diagram of the function generator in IC 8038 (or) any other equivalent and explain its operation. (16)
4. Write an explanatory note on opto-couplers. (16)
5. Explain in detail about the 380 power amplifier. (16)

//////////////////ALL THE BEST//////////////////