

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2022**

**LINEAR INTEGRATED CIRCUITS**

[Maximum Marks: **100**]

[Time: **3 Hours**]

**PART-A**

[Maximum Marks: **10**]

I. (Answer ***all*** questions in one or two sentences. Each question carries **2** marks)

1. List different package types of Op-Amp.
2. Name the requirements of an instrumentation amplifier.
3. What is Pull-in time?
4. Write down the expression for time period of astable multivibrator using IC 555.
5. What is load regulation of a voltage regulator? (5 x 2 = 10)

**PART-B**

[Maximum Marks: **30**]

II. (Answer ***any five*** of the following questions. Each question carries **6** marks)

1. List the characteristic of an ideal Op-Amp.
2. What is virtual ground? Why is it called so?
3. Show how an Op-Amp works as an adder circuit.
4. Describe the working of peak detector.
5. Explain the block diagram of PLL.
6. Draw the functional diagram of 555 IC.
7. Describe the advantages of SMPS. (5 x 6 = 30)

**PART-C**

[Maximum Marks: **60**]

(Answer ***one*** full question from each Unit. Each full question carries **15** marks)

**UNIT – I**

- III. (a) Explain block diagram of general purpose Op-Amp. (9)
- (b) Define different electrical parameters of Op-Amp. (6)

**OR**

- IV. (a) Explain the working of differential amplifier basic circuit. (9)  
(b) Derive the expression for voltage gain of non inverting amplifier. (6)

**UNIT – II**

- V. (a) With the help of circuit and waveform explain the working of Schmitt trigger clearly  
Showing UTP and LTP. (9)  
(b) With a circuit diagram show how a practical differentiator eliminates the problem of simple  
differentiator. (6)

**OR**

- VI. (a) Explain the working of astable multivibrator using Op-Amp with the help of circuit and  
waveform. (12)  
(b) Draw the circuit diagram of a second order low pass filter and give the expression of cut-off  
frequency. (3)

**UNIT- III**

- VII. (a) Explain the block diagram of VCO. (12)  
(b) List the applications of PLL. (3)

**OR**

- VIII. Explaining the working of monostable multivibrator using 555 with the help of functional  
diagram. (15)

**UNIT - IV**

- IX. (a) Explain the features of IC voltage regulators. (7)  
(b) Show how a dual voltage supply is made using to three terminal regulators. (8)

**OR**

- X. (a) Explain the principle of operation of SMPS with relevant diagram. (9)  
(b) Explain the working principle of opto coupler. (6)

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