

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017

**LINEAR INTEGRATED CIRCUITS**

[Time : 3 hours

(Maximum marks : 100)

**PART — A**

(Maximum marks : 10)

Marks

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

1. Define slew rate of Op-amp.
2. Draw the symbol of Op-amp and mark the terminals.
3. Define capture range of PLL.
4. What is the function of a comparator ?
5. What are the advantages of IC voltage regulator ? (5 × 2 = 10)

**PART — B**

(Maximum marks : 30)

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

1. Derive the equation for voltage gain of an inverting Op-amp.
2. What are the characteristics of an ideal Op-amp ?
3. Explain the circuit of zero crossing detector using Op-amp.
4. Explain the circuit of Schmitt trigger using Op-amp.
5. Draw the block diagram of PLL.
6. Draw the functional block diagram of IC 723.
7. Explain the block diagram of a logarithmic multiplier. (5 × 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 the block diagram of general purpose Op-amp. 10  
 (b) Explain the working of voltage follower using Op-amp. 5

OR

- IV (a) Explain differential amplifier using transistors. 10  
 (b) Explain the pin configuration of IC 741. 5

## UNIT — II

- V (a) Draw the circuit of full wave precision rectifier and explain the working principle. 8  
 (b) Explain how an Op-amp works as a subtractor. 7

OR

- VI (a) Explain the working principle of instrumentation amplifier. 8  
 (b) Explain the circuit of wein bridge oscillator using IC 741. 7

## UNIT — III

- VII (a) Explain the block diagram of VCO. 8  
 (b) Explain how PLL works as a frequency multiplier. 7

OR

- VIII (a) Explain the monostable operation using IC 555. 8  
 (b) Explain LM380 audio power amplifier. 7

## UNIT — IV

- IX (a) Draw the block diagram of a dual power supply and explain. 8  
 (b) Explain the working of a low voltage regulator using IC 723. 7

OR

- X (a) Draw the standard representation of a 3 terminal IC regulator and explain its features. 8  
 (b) Explain the basic multiplier circuit works as a squarer. 7