

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL – 2021**

LINEAR INTEGRATED CIRCUITS

[Maximum Marks: 75]

[Time: 2.15 Hours]

PART-A

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

I

1. Define slew rate of an op-amp.
2. Draw the circuit diagram of peak detector using op-amp.
3. Define pull-in time of PLL.
4. Draw the pin diagram of opto-coupler IC 4N35.
5. Write the expression for time period of astable and monostable circuits using IC 555.

(3×2=6)

PART-B

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

II

1. List the characteristics of an ideal operational amplifier.
2. Write a note on comparator circuit using op-amp.
3. Describe LM380 audio power amplifier.
4. List the advantages and disadvantages of SMPS.
5. Explain the first order active high pass filter using op-amp.
6. Describe the working of frequency multiplier using PLL.
7. List the features of LM723 voltage regulator.

(4×6=24)

PART-C

(Answer *any of the three units* from the following. Each full question carries 15 marks)

UNIT-I

- III (a) Draw the circuit of inverting amplifier using op-amp and derive the expression of voltage gain. (7)
- (b) Explain the working of basic differential amplifier circuit using transistor. (8)

OR

- IV (a) Discuss the different package types available for op-amp. (7)
(b) Explain the block diagram of general purpose op-amp. (8)

UNIT – II

- V (a) Explain the circuit diagram of astable multivibrator using op-amp. (8)
(b) Explain the working of precision full wave rectifier using op-amp. (7)

OR

- VI (a) Explain V to I converter and I to V converter using op-amp. (8)
(b) Explain the working of wien bridge oscillator using op-amp. (7)

UNIT – III

- VII (a) Explain the block diagram of NE/SE 566 VCO. (10)
(b) List the features of 555 timer. (5)

OR

- VIII (a) Explain the working of monostable multivibrator using 555 timer. (10)
(b) List the electrical characteristics of 565 PLL. (5)

UNIT – IV

- IX (a) Explain the block diagram of SMPS. (8)
(b) Construct $\pm 15V$ dual power supply using LM320 and LM340 and explain the working of the circuit. (7)

OR

- X (a) Explain the basic low voltage regulator using LM723. (10)
(b) Explain the operation of adjustable voltage regulator using LM317. (5)
