

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2020**

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. List different manufacturer's designations for linear ICs.
2. Draw the circuit diagram of a zero crossing detector using op-amps.
3. Define capture range of a PLL.
4. Write the expression for output frequency of astable circuits using 555.
5. List the type of different IC regulators. (3 x 2 = 6)

PART-B

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

- II 1. Explain the concept of virtual ground in an op-amp circuit.
2. Explain the working of voltage follower circuit using op-amp.
3. Explain the working of a half wave precision rectifier.
4. Draw and explain the first order low pass filter using op-amp.
5. Explain the general block diagram of a PLL.
6. List the features of 555 timer.
7. Describe the advantages and disadvantages of SMPS. (4 x 6 = 24)

PART-C

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

UNIT – I

- III (a) With circuit diagram explain the working of a non-inverting amplifier. (7)
(b) Draw the block diagram of an op-amp and explain each block. (8)

OR

- IV (a) List the characteristics of an ideal operational amplifier. (6)
(b) Draw the circuit diagram of an inverting amplifier using op-amp and derive the expression for voltage gain. (9)

UNIT – II

- V (a) Draw and explain the circuit diagram of an instrumentation amplifier. (7)
(b) Draw and explain the Monostable Multivibrator circuit using op-amp. (8)

OR

- VI (a) Draw and explain the working of difference amplifier using op-amp. (7)
(b) Draw and explain the working Wein bridge oscillator using op-amp. (8)

UNIT- III

- VII (a) Explain the block diagram of NE/SE 566 Voltage Controlled Oscillator. (7)
(b) Draw and explain the working of LM 380 audio power amplifier. (8)

OR

- VIII (a) Explain the block diagram of frequency multiplier using PLL. (6)
(b) Draw the internal architecture of 555 timer and explain. (9)

UNIT - IV

- IX (a) Explain the circuit of a dual power supply using LM 320 and LM 340. (8)
(b) Briefly describe the principle of operation of IC 4N35 opto-coupler. (7)

OR

- X (a) List the important features of LM 723 voltage regulator. (5)
(b) Explain the basic block diagram of SMPS. (10)
