

TED (15) – 4042

Reg. No.

(REVISION — 2015)

Signature

FOURTH SEMESTER DIPLOMA EXAMINATION IN
ENGINEERING/TECHNOLOGY — APRIL, 2017

LINEAR INTEGRATED CIRCUITS

(Common for EL, MD and EC)

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Determine the output voltage of a non-inverting amplifier if $R_f = 5k\Omega$, $R_i = 1k\Omega$ and $V_i = 0.2V$.
2. List any two types of packages available for 741 op-amp.
3. List any two advantages of instrumentation amplifier.
4. List two applications of PLL.
5. State the need for voltage regulator. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain the working of a basic differential amplifier circuit using transistors.
2. Describe the working of a positive peak detector circuit using op-amp.
3. Explain the circuit diagram of an adder using op-amp.
4. Describe an FM demodulator using PLL.
5. Draw the circuit diagram of an astable multivibrator using IC555 and explain.
6. Illustrate the principle of an opto-coupler.
7. Explain the operation of adjustable voltage regulator using LM317. (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) Define the following parameters.
- | | | |
|----------------------------|-------------------------|---|
| (i) CMRR | (ii) Slew rate | |
| (iii) Input offset voltage | (iv) Input bias current | 8 |
- (b) Explain the working of an inverting amplifier using op-amp. 7

OR

- IV (a) Explain the functional block diagram of an op-amp. 7
- (b) Derive the expression for voltage gain of a non-inverting amplifier. 8

UNIT — II

- V (a) Briefly explain the working of triangular wave generator using op-amp. 8
- (b) Describe the working of a differentiator using op-amp and draw the output, if the input is a square wave. 7

OR

- VI (a) Briefly explain the working of a monostable multivibrator using op-amp. 8
- (b) Explain the working of a Schmitt trigger circuit using op-amp. 7

UNIT — III

- VII (a) Explain the functional block diagram of 565 PLL-IC. 10
- (b) Describe LM380 audio power amplifier. 5

OR

- VIII (a) Explain the circuit diagram of a monostable multivibrator using 555 timer. 8
- (b) Explain the block diagram of frequency multiplier using PLL. 7

UNIT — IV

- IX (a) Draw the block diagram of an SMPS and explain each block. 8
- (b) Describe the circuit diagram of a high voltage regulator using IC723. 7

OR

- X (a) With block diagram explain three terminal fixed voltage regulator. 8
- (b) Mention the advantages and disadvantages of SMPS. 7