TED (15) – 4042 Reg. No. .....

(REVISION — 2015) Signature .....

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. State the need for level shifter stage in op-amp.
2. Define the term CMRR of an op-amp.
3. Draw the frequency response of an ideal low pass filter.
4. Define lock range of a PLL.
5. State the principle of opto-couplers. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Mention different characteristics of an ideal op-amp.
2. Describe the working of a first order Butterworth LPF.
3. Illustrate the working of a zero crossing detector.
4. Explain the working of LM380 audio power amplifier.
5. Explain the general block diagram of a PLL.
6. Draw the circuit diagram of a low voltage regulator using IC723 and explain.
7. Describe the advantages and disadvantages of SMPS. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) Draw the Block Diagram of an op-amp and explain each block. 8

(b) Derive the expression for voltage gain of an inverting amplifier. 7

OR

IV (a) Explain the working of a voltage follower circuit using op-amp. 7

(b) With circuit diagram explain the working of a non-inverting amplifier. 8

UNIT — II

V (a) Briefly explain the working of an instrumentation amplifier. 10

(b) Describe the working of a Schmitt trigger circuit using op-amp. 5

OR

VI (a) Briefly explain the principle of an RC phase shift oscillator using op-amp. 8

(b) Explain the working of a full wave precision rectifier. 7

UNIT — III

VII (a) Explain the block diagram of FM demodulator using PLL. 5

(b) Draw the internal architecture of 555 timer and explain. 10

OR

VIII (a) Briefly explain the circuit diagram of a symmetrical astable multivibrator using 555 timer for getting a time period of 2ms. 8

(b) Explain the block diagram of frequency multiplier using PLL. 7

UNIT — IV

IX (a) Explain the functional block diagram of LM723 voltage regulator. 8

(b) With circuit diagram explain the operation of adjustable voltage regulator using LM317. 7

OR

X (a) Explain the basic block diagram of an SMPS. 8

(b) Draw the circuit of a dual power supply using LM320 and LM340 and explain. 7