TED (15) - 4042

(REVISION — 2015)

Reg. No. .....

Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

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 an op-amp.
2. Draw the circuit diagram of a voltage to current converter using op-amp.
3. Write the expression for frequency of oscillation of RC phase shift oscillator and Wien bridge oscillator using op-amp.
4. Draw the pin diagram of 555 timer.
5. Draw the pin configuration of the voltage regulator IC LM 7805. $(5 \times 2 = 10)$

PART — B

(Maximum marks : 30)

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

1. Draw the pin configuration of IC 741 and explain the function of each pin.
2. Draw and explain the circuit diagram of an op-amp voltage follower.
3. Explain the working of an op-amp integrator with the help of circuit diagram and waveform.
4. List the features of 555 timer.
5. With the help of a block diagram explain how PLL can be used as a frequency multiplier.
6. Draw the pin diagram of opto-coupler IC 4N35. List its features and applications.
7. Construct a +15V regulated power supply using suitable LM 78XX series IC. Explain the working of the circuit. $(5 \times 6 = 30)$

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 circuit diagram of an inverting amplifier using op-amp and derive the expression for voltage gain. 8

(b) Explain the concept of virtual ground in an op-amp circuit. 7

OR

IV (a) Define input offset voltage, input offset current, input bias current and CMRR of an op-amp. 8

(b) Draw the circuit diagram of a non-inverting amplifier using op-amp and derive the expression for voltage gain. 7

UNIT — II

V (a) Draw and explain the monostable multivibrator circuit using op-amp. 8

(b) Draw and explain the first order high pass filter using op-amp. 7

OR

VI (a) Draw the circuit diagram of Wien bridge oscillator using op-amp and explain its working. 8

(b) Draw and explain the working of non-inverting summing amplifier using op-amp. 7

UNIT — III

VII (a) Draw and explain the functional block diagram of 555 timer. 8

(b) Draw the pin configuration of NE566 VCO and explain the function of each pin. 7

OR

VIII (a) Draw the circuit of a monostable multivibrator using 555 IC and explain its working. 8

(b) Draw and explain the circuit diagram of FM demodulator using PLL IC LM565. 7

UNIT — IV

IX (a) Draw and explain the pin diagram of LM 723 voltage regulator. 8

(b) Construct a dual power supply using LM 320 and LM 340. Explain the working of the circuit. 7

OR

X Draw the block diagram of SMPS. Explain its working with necessary waveforms. 15

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