



MODEL QUESTION PAPER

TED (15) – 4042

Reg. No.....

(REVISION – 2015)

Signature.....

FOURTH SEMESTER DIPLOMA EXAMINATION IN ENGINEERING / TECHNOLOGY

**LINEAR INTEGRATED CIRCUITS**

(Common for EL, MD and EC)

(Maximum Marks: 100)

(Time: 3 hours)

**PART – A**

(Maximum Marks: 10)

Marks

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

1. List two applications of voltage follower circuit
2. Define the term slew rate of an op-amp
3. Define cut-off frequency of a filter
4. Define pull-in time 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. Explain the concept of virtual ground in op-amp?
2. Describe the working of a V to I converter using op-amp?
3. Explain the working of a subtractor circuit using op-amp?
4. Design an astable multivibrator using 555 for a frequency of 5Khz
5. List the important characteristics of 565 PLL IC?
6. Describe how a fixed voltage regulator can be converted into an adjustable regulator
7. Describe the role of PWM stage in SMPS

(5×6 = 30)



**PART – C**  
(Maximum Marks: 60)

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

**UNIT - I**

- |     |   |   |
|-----|---|---|
| III | 1. Draw the pin diagram of an op-amp and explain each pin?                              | 7 |
|     | 2. Derive the expression for output voltage and voltage gain of an inverting Amplifier. | 8 |

OR

- |    |  |   |
|----|--|---|
| IV | 1. Explain the electrical parameters of an op-amp?                     | 8 |
|    | 2. With circuit diagram explain the working of a difference amplifier? | 7 |

**UNIT – II**

- |   |   |    |
|---|---|----|
| V | 1. Briefly explain the advantages of an instrumentation amplifier?                                      | 5  |
|   | 2. State the need for a precision rectifier and explain the working of a half wave precision rectifier? | 10 |

OR

- |    |  |   |
|----|--|---|
| VI | 1. Briefly explain the principle of a wein bridge oscillator using op-amp? | 8 |
|    | 2. Explain the working of a Schmitt trigger circuit using op-amp?          | 7 |

**UNIT – III**

- |     |   |   |
|-----|---|---|
| VII | 1. Explain the circuit of a monostable multivibrator using 555? | 7 |
|     | 2. Draw the internal architecture of 566 VCO IC and explain?    | 8 |

OR

- |      |   |   |
|------|---|---|
| VIII | 1. Explain the internal architecture of 555 timer IC and explain? | 8 |
|      | 2. Explain the block diagram of frequency multiplier using PLL?   | 7 |

**UNIT – IV**

- |    |  |   |
|----|--|---|
| IX | 1. Briefly describe the principle of operation of IC 4N35 opto-coupler?              | 7 |
|    | 2. With circuit diagram explain the operation of high voltage regulator using LM723? | 8 |

OR

- |   |   |    |
|---|---|----|
| X | 1. Explain the functional block diagram of LM723 voltage regulator? | 10 |
|   | 2. Draw the circuit of a dual power supply using LM78xx and LM79xx. | 5  |