

TED (15/19) -4042  
(Revision- 2015/19)

**N21-04444**

Reg.No.....  
Signature. ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE –NOVEMBER -2021.

**LINEAR INTEGRATED CIRCUITS**

(Maximum Marks : 75)

[Time : 2.15 hours]

**PART–A**

Marks

**I.** Answer **any three** questions in one or two sentences. Each question carries 2 marks.

1. List any two package types of operational amplifier.
2. Define CMRR of an op-amp.
3. Draw the frequency response of High pass filter.
4. Write the expression for time period of astable circuit using 555.
5. Give any two advantages of SMPS.

(3x2=6)

**PART - B**

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

1. Explain voltage follower using operational amplifier.
2. Draw the circuit of Zero crossing detector using op-amp and explain its working.
3. Explain the working of integrator circuit using op-amp.
4. Define capture range, lock-in-range, and pull-in-time of PLL.
5. List the features of 555 timer.
6. Explain the operation of adjustable voltage regulator LM317.
7. Draw the circuit of low voltage regulator using LM723 and explain.

[4x6 =24]

**PART - C**

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

**UNIT I**

- III** (a) Derive the expression for output voltage and voltage gain in inverting amplifier. (8)  
(b) What are characteristics of an ideal operational amplifier? (7)

**OR**

- IV** (a) Explain the block diagram of general purpose operational amplifier. (8)  
(b) Explain the concept of virtual ground. (7)

**UNIT- II**

- V** (a) Describe the working of summing amplifier. (8)  
(b) Explain the working of current to voltage converters. (7)

**OR**

- VI** (a) With neat diagram explain the working of RC phase shift oscillators. (8)  
(b) Explain the working of astable multivibrator using op-amp. (7)

**UNIT- III**

- VII** (a) Draw the block diagram of PLL and explain. (7)  
(b) Explain the working of monostable multivibrator using 555 timer. (8)

**OR**

- VIII** (a) Describe any two applications of PLL. (7)  
(b) Explain the functional block diagram of IC 555. (8)

**UNIT – IV**

- IX** (a) Explain dual power supply using LM 320 and LM 340. (8)  
(b) With the block diagram explain SMPS. (7)

**OR**

- X** (a) Write the features of LM 723 voltage regulator. (7)  
(b) Explain working of optocoupler IC 4N35. (8)

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