

Code No.: EC403PC

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H.T.No.

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CMR ENGINEERING COLLEGE: : HYDERABAD

UGC AUTONOMOUS

II-B.TECH-II-Semester End Examinations (Regular) - August- 2023

LINEAR IC APPLICATIONS

(ECE)

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) List the AC characteristics of op-amp. [2M]
- b) What are the features of op-amp? [2M]
- c) Define Log amplifier. [2M]
- d) What are the applications of V-I converter? [2M]
- e) Compare active and passive filters. [2M]
- f) What is the significance of VCO in PLL? [2M]
- g) Give the formulas to evaluate LTP and UTP in a Schmitt trigger. [2M]
- h) List the application of astable multivibrator. [2M]
- i) What are the applications of ADC? [2M]
- j) What are the specifications of a DAC? [2M]

PART-B

(50 Marks)

2. Explain the working of closed loop inverting and Non-Inverting amplifier and derive the equation of its Gain. [10M]
- OR**
3. Draw and explain the operation of op-amp as an integrator. [10M]
 - 4.a) Explain the working of a Schmitt trigger with neat circuit diagram. [5M]
 - b) If $R_2 = 150K\Omega$, $R_1 = 100K\Omega$, $V_{in} = 500mV$ Sine wave, saturation voltage is $\pm 15V$, for an op-amp based Schmitt trigger. Find Threshold Voltage V_{UTP} , V_{LTP} and hysteresis voltage. [5M]
- OR**
5. Draw and explain the instrumentational amplifier using op-amp and mention its applications. [10M]
 6. Explain the working of wein bridge oscillator and find its frequency of oscillation. [10M]
- OR**
7. For all pass filters, the values of R and C are $7.95K\Omega$ and $0.02\mu F$ respectively. If the input frequency is $1.5KHz$, calculate the phase shift. [10M]
 - 8.a) Draw and explain the functional block diagram of PLL(IC565) and explain its working. [7M]
 - b) What are the applications of PLL? [3M]
- OR**
- 9.a) Explain the working of an Astable multivibrator using IC-555 with circuit diagram. [6M]
 - b) If $R_1=1K\Omega$, $R_2=1K\Omega$, $C=1 \mu F$, find the output frequency of IC-555 as Astable multivibrator. [4M]

- 10.a) Compare R - 2R and weight resistor types of DACs. [6M]
b) Write short notes on A/D converters. [4M]
- OR**
11. Explain the working of R-2R ladder DAC with neat circuit diagram and write its limitations. [10M]
