Code No.: EC403PC

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–II–Semester End Examinations (Supply) -June- 2025
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) Define an operational amplifier.   [2M]
   b) Define input offset voltage.   [2M]
   c) What are the different features of IC 723?   [2M]
   d) What are the characteristics of a comparator?   [2M]
   e) Discuss about all pass filters.   [2M]
   f) What are the applications of VCO?   [2M]
   g) Draw the functional diagram of 555 timers.   [2M]
   h) What are the applications of astable multivibrator using 555 Timer?   [2M]
   i) List different ADC and DACs.   [2M]
   j) An 8 bit D/A converter as a resolution of 8mV/bit. Find the analog output voltage for the input 10111010.   [2M]

PART-B   (50 Marks)

2. Draw the circuit diagram of a two input non-inverting type summing amplifier and derive the expression for the output voltage.   [10M]

OR

3. Explain in detail all the DC and AC characteristics of an ideal Op-Amp with relevant expressions.   [10M]

4. Explain the working of instrumentation amplifier with suitable diagram.   [10M]

OR

5. Draw the block diagram of Sample & Hold amplifier and explain its operation in detail.   [10M]

6. a) Design an active high pass filter with cutoff frequency of 4KHz.   [5M]
   b) How to generate a sawtooth wave form? Explain the working of such a circuit with neat circuit diagram.   [5M]

OR

7. Design a wide band pass filter with f_L=500 Hz and f_H = 2KHz, and a pass band gain of 5 for both sections of filter. Also determine the value of Q for the filter.   [10M]

8. Draw the block diagram of IC565 PLL and explain about each block. Make circuit connections to track the input signal and explain its operation.   [10M]

OR

9. a) Draw the circuit diagram of monostable multivibrator by using IC-555 timer and explain its operation.   [7M]
   b) Obtain pulse width of output of IC-555 based monostable multivibrator for c = 0.047µF and R = 56K.   [3M]

10. Explain the working of R-2R ladder DAC with neat circuit diagram and write its limitations. [10M]

OR

11. Explain the working of dual slope ADC with neat circuit diagram and compare its performance with other ADC. [10M]

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