

# School of Electrical Electronics and Communication Engineering

Electronics and Communication Engineering

ETE - Jun 2023

Time : 3 Hours

Marks : 100

## Sem IV - G2UA401B - Integrated Circuits

*Your answer should be specific to the question asked*

*Draw neat labeled diagrams wherever necessary*

1. Explain the concept of inverting zero Crossing Detector with circuit diagram and waveform. K2 CO3 (5)
2. Mention the characteristics and their respective values of an ideal OPAMP. K1 CO1 (5)
3. Draw the circuit diagram of voltage to current converter. Also write the expression for output current. K2 CO2 (5)
4. Design the circuit for Counter type and Successive Approximation ADC. Explain in detail. K3 CO2 (10)
5. Explain how square wave is generated using Schmitt trigger. Also derive the expression for lower and upper threshold voltage levels. K2 CO1 (10)
6. Design the circuit diagram of R-2R ladder 4-bit D/A converter circuit. Find the output voltages for all possible values of binary inputs. K3 CO3 (10)
- 7) Generate AM signal with the help of square law device. Explain with the help of mathematical expression. K4 CO4 (10)

### OR

- Apply Barkhausens criteria to design an OPAMP based RC phase shift oscillator. Mention the expression to represent the frequency of its oscillations K4 CO4 (10)
8. Design the circuit diagram for multiplication and Divisions of two voltages using Op-Amp K4 CO1 (15)
  9. Explain the concept and limitations of delta modulation. Design a circuit to overcome the limitations of delta modulation. K5 CO3 (15)
  - 10) What is FSK. Draw its waveforms. Discuss how does FSK signal is generated and demodulated. K5 CO4 (15)

### OR

- Design a PLL integrated Circuit. Also explain its basic concept and operation. Also Discuss its one application in detail. K5 CO4 (15)