

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Advanced Supplementary Examinations March - 2025
IC APPLICATIONS

(Open elective)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions. **ONE** Question from Each unit
All Questions Carry Equal Marks

UNIT-I

1. a) What are the linear applications of an operational amplifier (OP-AMP)? [7M]
Explain any two of them.
- b) Draw and explain the design concepts of Schmitt Trigger using OP-AMP? [7M]
Present the necessary expressions to determine hysteresis.

(OR)

2. a) What are the AC characteristics of an operational amplifier (OP-AMP)? Define [7M]
and explain them, in brief.
- b) Draw and explain the design concepts of Astable Multivibrator using OP- [7M]
AMP? Present the necessary expressions to determine the duty cycle.

UNIT-II

3. a) Draw and explain the functional diagram of 555 Timer. Present the applications [7M]
of 555 Timer.
- b) Explain the principle of operation and description of individual blocks of 565. [7M]

(OR)

4. a) Draw and explain the block diagram of PLL. Present the applications of PLL. [7M]
- b) Draw and explain the design concepts of Monostable Multivibrator using 555 [7M]
Timer? Present the necessary expression to determine the pulse width..

UNIT-III

5. a) Draw and explain the circuit diagram of R-2R Ladder type DAC. Illustrate [7M]
with suitable example.
- b) Draw and explain the circuit diagram of Successive Approximation Register [7M]
type ADC.

(OR)

6. a) Draw and explain the circuit diagram of Weighted Resistor Type DAC. [7M]
Illustrate with suitable example.
- b) Draw and explain the circuit diagram of Dual Slope type ADC. [7M]

UNIT-IV

7. a) Draw and explain the circuit diagram of 3-to-8 Decoder with appropriate TTL [7M]
IC.
- b) Draw and explain the circuit diagram of 4-BIT parallel binary adder using IC [7M]
7483

(OR)

8. a) Draw and explain the circuit diagram of 8-to-1 multiplexer using IC 74151. [7M]
- b) Draw and explain the circuit diagram of 4-bit Magnitude Comparator using IC [7M]
7485

UNIT-V

9. a) Draw and explain the circuit diagram of Master-Slave J-K Flip-flop using appropriate IC. [7M]
b) Draw and explain the circuit diagram of 4-bit Binary Ripple Counter using IC 7493. [7M]

(OR)

10. a) Draw and explain the circuit diagram of S-R Flip-flop using appropriate IC. [7M]
b) Draw and explain the circuit diagram of 4-bit Shift Register using appropriate IC. [7M]
