

**ANURAG Engineering College**

(An Autonomous Institution)

III B. Tech I Semester Regular/Supplementary Examinations, Dec-2023/Jan-2024

**LINEAR AND DIGITAL IC APPLICATIONS**

(COMMON TO EEE &amp; ECE)

**Time: 3 Hours****Max.Marks:75****Section – A (Short Answer type questions)****(25 Marks)****Answer All Questions**

	<b>Course Outcome</b>	<b>B.T Level</b>	<b>Marks</b>
1. What is the symbol of Op-Amp.	CO1	L1	2M
2. List two differences between ideal and practical Op – Amp.	CO1	L1	3M
3. What are the building blocks of PLL.	CO2	L1	2M
4. Define lock range and capture range.	CO2	L1	3M
5. Draw the block diagram of Weighted resistor DAC.	CO3	L1	2M
6. Classify types of Digital to Analog converters.	CO3	L2	3M
7. What is the characteristics table of T Flip Flop.	CO4	L1	2M
8. Mention the types of Code converters.	CO4	L1	3M
9. Define Encoder.	CO5	L1	2M
10. Classify possible types of shift registers.	CO5	L2	3M

**Section B (Essay Questions)****Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Develop an Op-Amp Differentiator that differentiate any input signal $f_{max} = 200$ Hz.	CO1	L3	10M
<b>OR</b>			
B) Sketch the circuit diagram of Instrumentation Amplifier and derive the expression for output voltage and mark important features.	CO1	L2	10M
12. A) Design Astable multivibrator to generate output signal with frequency of 5KHz at duty cycle of 75%.	CO2	L3	10M
<b>OR</b>			
B) Draw the block diagram of monostable multivibrator using 555 timer and derive an expression for its frequency of oscillation.	CO2	L2	10M
13. A) In a R-2R Digital to analog converter, the $V_R$ is 5V, $R_f$ is 5 K $\Omega$ and R is 2.5 K $\Omega$ and digital input word is 1101, calculate output voltage.	CO3	L3	10M
<b>OR</b>			
B) i) Determine resolution of an 8 bit A to D converter for a 8V input. ii) Identify the limitations of weighted resistor DAC.	CO3 CO3	L3 L1	5M 5M
14. A) Design three bit Binary to Excess-3 code converter.	CO4	L3	10M
<b>OR</b>			
B) Design 2 bit Asynchronous up-down counter using T Flip flops.	CO4	L3	10M
15. A) Summarize the operation of SIPO shift register with neat sketches using D flip flops.	CO5	L2	10M
<b>OR</b>			
B) Develop a circuit to identify Prime numbers from 0 to 12 using Multiplexer.	CO5	L3	10M