



R20 Regulation

Subject code:3P4DD

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech IV Semester Supplementary Examinations, April 2025

LINEAR IC APPLICATIONS

(ECE)

Maximum Marks: 70

Date:09.03.2025

Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 3 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry 10 marks each	10X2M=20 Marks	Marks	CO	BTL
1 Draw the pin diagram of IC 741.		2M	1	L1
2 Classify integrated circuits based on level of integration.		2M	1	L1
3 List the disadvantages of comparator.		2M	2	L1
4 List the features of IC 733 voltage monitor.		2M	2	L1
5 What is an astable multivibrator?		2M	3	L1
6 Classify different types of oscillators.		2M	3	L1
7 What are the building blocks of IC555?		2M	4	L1
8 Write the applications of PLL.		2M	4	L1
9 What are data converters?		2M	5	L1
10 Determine the resolution of a 8 bit A/D converter for a 10 V full scale range.		2M	5	L1

Part-B

Answer All the following questions.	(3X10M=30Marks)	Marks	CO	BTL
11 a) Describe the effect of input offset voltage and input bias currents on the op-amp output voltage. b) Design an amplifier with a gain of -10 and input resistance equal to 10kΩ.	6M 4M	10	1	L2
OR				
12 a) Explain different modes of operation of op-amp. b) Compare ideal and practical op-amp characteristics.	5M 5M	10	1	L2
13 Explain the circuit diagram of instrumentation amplifier and derive the expressions for the gain.	10M	10	2	L2
OR				
14 a) Explain operation of non-inverting comparator and draw output waveforms for different reference voltages. b) Draw the hysteresis loop of a op-amp Schmitt trigger with $R_1=R_2=1k\Omega$, $V_{CC}=13V$ and calculate hysteresis width also.	5M 5M	10	2	L2
15 a) Explain the operation of astable wave generator. b) Design a first order low pass filter for cutoff frequency of 2 kHz and pass band gain of 2.	5M 5M	10	3	L2

	OR			
16	Derive the frequency of oscillations of a RC phase shift oscillator and explain its operation.	10M	3	L2
17	a) Explain the operation of Astable multivibrator using IC 555 with relevant waveforms. b) Design a monostable multivibrator using IC 555 to produce an output pulse 10sec.	6M 4M	4	L2
	OR			
18	a) Draw the functional block diagram of IC565 and explain it. b) Explain how PLL acts as a FSK demodulator and frequency divider.	5M 5M	4	L2
19	Explain the working of Inverted R-2R ladder DAC with neat circuit diagram & write its advantages.	10M	5	L2
	OR			
20	a) List the specifications of ADC. b) Discuss the operation of Successive approximation ADC.	3M 7M	5	L2