



R20 Regulation

Subject code: 3P4DD

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Supplementary Examinations, December 2025

LINEAR IC APPLICATIONS (ECE)

Maximum Marks: 70

Date: 23.12.2025

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 5 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 equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	List the features of IC 741.	2M	1	L1
2	Draw the ideal equivalent circuit of opamp.	2M	1	L1
3	What is buffer amplifier?	2M	2	L1
4	Draw the circuit diagram of opamp inverting adder circuit.	2M	2	L1
5	Classify the active filters.	2M	3	L1
6	What is an oscillator?	2M	3	L1
7	List the applications of monostable multivibrator using IC555.	2M	4	L1
8	Draw the pin diagram of IC 565.	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 input range.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Derive the expression for the closed loop gain of non-inverting amplifier. Draw the input and output waveforms.	10M	1	L2
OR				
12	a) List the ideal characteristics of op-amp. b) Explain the frequency response of opamp.	5M 5M	1	L2
13	Explain the operation of op-amp as practical differentiator and draw output waveforms for step, square and sinewave inputs.	10M	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 opamp schmitt trigger with $R_1=R_2=1k\Omega$, $V_{cc}=13v$ and Calculate hysteresis width also.	5M 5M	2	L2
15	Draw the schematic diagram of Wein bridge oscillator and derive the expression for frequency of oscillations.	10M	3	L2
OR				

16	a) Derive the gain for I order high pass Butterworth filter and draw its frequency response. b) Explain the operation of sawtooth wave generator.	5M 5M	3	L2
17	a) Draw Schmitt trigger circuit using IC 555 and explain its operation. b) Compare monostable and astable multivibrators.	5M 5M	4	L2
OR				
18	Explain how PLL works as FM demodulator and Frequency synthesizer.	10M	4	L2
19	Explain the working of R-2R ladder DAC with neat circuit diagram and write its limitations.	10M	5	L2
OR				
20	Explain the working of parallel comparator type ADC with neat circuit diagram and compare its performance with other ADC's.	10M	5	L2