



**B.Tech IV Semester Supplementary Examinations, December 2024**

**LINEAR IC APPLICATIONS**  
**(Electronics and Communication Engineering)**

**Maximum Marks: 70**

**Date:10.12.2024**

**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 which carries 10M.  
 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		CO	Bloom Tx
1	Draw the pin diagram of IC 741.	1	L1
2	Classify integrated circuits based on level of integration.	1	L1
3	List the disadvantages of comparator.	2	L1
4	List the features of IC 723 voltage regulator.	2	L1
5	What is all pass filter?	3	L1
6	Classify different types of oscillators.	3	L1
7	What are the building blocks of IC555?	4	L1
8	Write the applications of PLL.	4	L1
9	What are data converters?	5	L1
10	Determine the resolution of a 8 bit A/D converter for a 10 V input range.	5	L1

**Part-B**

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	Discuss a.c . and d.c. characteristics of op-amp with relevant expressions. [10M]	1	L2 & L3
OR			
12	A. Draw the block diagram of op-amp and explain its individual blocks. [6M] B. An op-amp operates as a unity gain buffer with 3V (peak to peak) square wave input. If op-amp is ideal with slew rate 0.5V/μsec, find the maximum frequency of operation. [4M]	1	L2
13	Explain the operation of op-amp as practical integrator with relevant expressions. [10M]	2	L3
OR			
14	A. Explain the operation of inverting a.c. amplifier. [5M] B. Design a practical differentiator circuit that will differentiate an input signal with $f_{max}=150\text{Hz}$ . [5M]	2	L2 & L3

15	Explain the operation of Triangular wave generator and derive the expression for frequency of oscillations. [10M]	3	L3
	OR		
16	A. Design a high pass filter with a cut off frequency of 10kHz with a pass band gain of 1.5. [5M] B. Write the advantages and disadvantages of active filters. [5M]	3	L4 & L2
17	Draw and explain the functional block diagram of IC 555. [10M]	4	L2
	OR		
18	Draw the basic block diagram of phase locked loop and explain the importance of each block. [10M]	4	L2
19	Explain the working of R-2R ladder DAC with neat circuit diagram and write its limitations. [10M]	5	L3
	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