



Regulation R18

Subject code: 2P4DD

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Supplementary Examinations, February 2024

LINEAR & DIGITAL IC APPLICATIONS

(ECE)

Maximum Marks: 70

Date: 23.02.2024 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.
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)

Q.NO	QUESTIONS	Marks	CO	Blooms Tx
1	List features of 741 op-amp.	2	CO1	L2
2	What is Zero crossing detector?	2	CO1	L1
3	List various applications of IC 555 Timer.	2	CO2	L1
4	Define capture range and lock range?	2	CO2	L4
5	Define the following terms as related to DAC: i) Linearity ii) Resolution.	2	CO3	L2
6	The LSB of a 10-bit DAC is 20mv. calculate the output voltage for an input, 1011001101.	2	CO3	L1
7	Explain noise margin and propagation delay with respect to CMOS logic.	2	CO4	L1
8	Explain about priority encoder.	2	CO4	L2
9	What is race around condition? How it is avoided?	2	CO5	L1
10	Explain about different types of ROM'S?	2	CO5	L1

Part-B

Answer All the following questions.

(10M X 5=50Marks)

11	Draw the circuit diagram of a two input non-inverting summing amplifier and derive the expression for the output voltage	10	CO1	L2
	OR			

12	What is a comparator? Discuss the non inverting comparator and obtain its input and output waveforms.	10	CO1	L4
13	Design and explain the operation of high Pass Filter with its characteristics	10	CO2	L4
	OR			
14	Explain the monostable operation of the 555 timer and derive the expression for the period of a pulse generated by the Timer	10	CO2	L2
15	Explain the operation of the fastest analog to digital converter. What is the main drawback of this converter? Compare this converter with other types	10	CO3	L4
	OR			
16	a) Give the schematic circuit of integrating type A/D converter and explain the operation of this system and derive expression for output voltage V_o .	6	CO3	L2
	b) Draw the circuit of a Ladder type DAC for 4 bits and derive expression for output voltage.	4	CO3	L3
	OR			
17	Explain about TTL driving CMOS and CMOS driving TTL with noise margin levels	10	CO4	L2
	OR			
18	a) Design 1:8 de multiplexer using two 1:4 de multiplexer	6	CO4	L2
	b) Design 4 bit binary to gray code converter.	4	CO4	L2
19	a) Design a modulo 12 ripple counter using 74×74.	6	CO5	L5
	b) Explain operation of DRAM cell array.	4	CO5	L3
	OR			
20	a) Design and implement 4-bit synchronous down counter using IC.	6	CO5	L4
	b) Explain the functional behaviour of Static RAM cell? Show the internal structure of 8×4 static RAM	4	CO5	L4