



R20 Regulation

Subject code: 3E7DA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Regular Examinations, November 2023

ANALOG IC DESIGN

(ELECTRONICS & COMMUNICATION ENGINEERING)

Maximum Marks: 70

Date: 08.12.2023 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)

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1	Write the significance in CMOS analog ICs.	L1
2	Write the layout considerations for passive components in CMOS technology.	L1
3	Define MOS switches and highlight their role in CMOS circuits.	L1
4	Write the function of a current mirror with Beta helper.	L2
5	What is the role of inverters in CMOS amplifier architectures?	L2
6	Write the applications of cascode amplifiers?	L1
7	Define operational amplifier.	L1
8	Define the power-supply rejection ratio of a two-stage op-amp.	L1
9	Define the primary parameters used for the characterization of comparators.	L2
10	What are the different types of comparators.	L1

Part-B

Answer All the following questions.

(5X10M=50Marks)

11	Write a brief note on various passive components that are available in CMOS technologies with relevant diagrams. [10M]	L2
	OR	
12	Derive the equation for threshold voltage for MOS transistor. [10M]	L3
13	Explain about voltage references and band gap references. [10M]	L2
	OR	
14	Design Wilson current mirror circuit. [10M]	L3
15	With the necessary schematics explain Simple folded cascode and Folded cascode with biasing. [10M]	L2
	OR	
16	Discuss the various types of current amplifiers in CMOS circuits and their applications. [10M]	L3

17	What are the various compensation techniques and explain about Miller compensation. [10M]	L3
OR		
18	A. Discuss the measurement techniques of operational amplifiers, emphasizing their role in circuit evaluation. [5M]	L3
	B. Explain the operation and characteristics of Cascode Op-Amps in CMOS technology. [5M]	L2
19	Explain the operation of two-stage open-loop comparators and their applications. [10M]	L2
OR		
20	Define discrete time comparators and derive the expression for output voltage of switched capacitor comparator. [10M]	L3