

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN  
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]  
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.



**Question Paper Code: 7027**

**M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – DECEMBER 2019**

**First Semester**

**VLSI Design**

**P19VD101 - CMOS ANALOG VLSI DESIGN**

**(Regulation 2019)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer ALL the questions**

**PART – A**

**(10 x 2 = 20 Marks)**

1. How can a MOSFET be used as an electronic switch?
2. What are the features and applications of switched capacitor filter?
3. What is the concept of current mirror?
4. What is the significance of self-biasing?
5. Enumerate the properties of negative feedback in amplifiers.
6. What is the difference between Cascade amplifier and Cascode amplifier?
7. What is the principle of current steering?
8. What are the merits and potential applications of Flash ADC?
9. Mention the practical issues in electronic packaging.
10. What is Photolithography? How is it different from conventional lithography?

**PART – B**

**(5 x 13 = 65 Marks)**

11. a) Sketch the architecture of FPAA. What are the applications of FPAA?  
(OR)
- b) Explain the procedure of realizing the MOS diode and resistor using switched capacitor with diagrams. Analyze the realization mathematically.

12. a) i. Draw the circuit schematic of a source follower with current mirror load and explain in detail. (7)  
ii. Give an account on Current mirror matching in MOSFET mirrors. (6)  
(OR)  
b) Perform the sensitivity analysis and temperature analysis in cascade connection with diagrams, mathematically.
13. a) i. Discuss the different types of noise and distortion in amplifiers. (7)  
ii. Draw CMOS Op-Amp and explain its operation in detail. (6)  
(OR)  
b) Compare and contrast different feedback topologies used in amplifiers.
14. a) Explain the concepts of 1. Cyclic DAC 2. Pipeline DAC with diagrams. (OR)  
b) Draw a neat schematic of 2 step flash ADC and explain its operation in detail.
15. a) Describe in detail the types and modeling of IC packaging with neat diagrams. (OR)  
b) Write a technical note on "A technical survey on Package simulation Tools".

### PART – C

(1 x 15 = 15 Marks)

16. a) Explain in detail the various steps in VLSI process technology with neat diagrams. Mention their features. (OR)  
b) Draw a Wilson current mirror circuit and derive the output equation. Also justify that the output current is dependent on input voltage ( $V_i$ ) and the input resistance ( $R_i$ ).