Register No.: ..... Name: .....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER M.TECH DEGREE EXAMINATION (R,S), MAY 2024

VLSI AND EMBEDDED SYSTEMS

(2021 Scheme)

Course Code: 21VE201

Course Name: Analog Integrated Circuits

Max. Marks: 60 **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Sketch and explain analog design octagon.
2. What are the characteristics of current mirror circuit?
3. Justify the need of band gap reference circuit in analog circuit design.
4. Explain wide swing differential amplifier.
5. State and prove Millers theorem.
6. Explain the frequency response of cascode stage amplifier.
7. Explain the concept of feedback using general structure.
8. How nonlinear distortion reduced by the application of negative feedback?

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

9. Explain the working of folded cascode amplifier. What is the advantage of folded cascode topology? (6)

OR

10. Analyze common drain amplifier circuit using small signal model. (6)

MODULE II

11. Explain the temperature sensitivity analysis of current mirror. (6)

OR

12. Describe the working of Wilson Current mirror. What are the advantages of Wilson current mirror? (6)

OR

MODULE III

13. Prove that in constant G_m biasing the transconductance does not depend upon process or supply voltage. (6)

OR

14. Explain how temperature independent voltage is generated. (6)

MODULE IV

15. Explain the working of source coupled differential amplifier. (6)

OR

16. Explain the working of MOS differential amplifier with source follower as output stage (6)

MODULE V

17. Perform the high frequency analysis of source follower circuit. (6)

OR

18. Perform the high frequency analysis of common drain amplifier circuit. (6)

MODULE VI

19. Calculate the noise spectrum and total noise power in the output of a RC low pass filter. (6)

OR

20. Explain how terminal impedance and bandwidth are modified by the application of feedback. (6)

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