Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech. Winter 2018 -19 Examination

Semester: 1 **Date: 11/12/2018**
Subject Code: 203212102 **Time: 10:30am to 1:00pm**
Subject Name: CMOS CIRCUIT DESIGN - I **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Define: Regularity, Modularity, Locality **(05)**

B) Why analog circuit fundamental necessary in recent era ? **(05)**

C) Explain the simplified view of VLSI design flow in detail. **(05)**

Q.2 Answer the following questions. (Attempt any three) (Each five mark) **(15)**

A) Explain the basics of current mirrors with necessary circuit diagrams.

B) Discuss Fabrication process steps for nMOS transistor.

C) Explain the gradual channel approximation for the MOSFET V-I characteristics.

D) Explain the miller's theorem in detail.

Q.3 A) Explain in detail: Gilbert cell **(07)**

B) Explain in brief: single ended and differential operations. **(08)**

OR

B) Explain the qualitative analysis in detail for the basic differential pair. **(08)**

Q.4 A) Explain small signal and large signal circuit for common source single stage amplifier with resistive load. **(07)**

OR

A) Define Amplifier and explain the characteristics of amplifier and why it is important. **(07)**

B) Explain the MOSFET scaling. **(08)**