

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Analog VLSI Design**Subject Code: 5TE02AVD1****Branch: M.Tech (VESD)****Semester: 2****Date: 04/05/2017****Time: 02:00 To 05:00****Marks: 70****Instructions:**

- (1) Use of Programmable calculator and any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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SECTION – I

- Q-1 Define the following terms (07)**
- a. Threshold voltage
 - b. Cascode current source
 - c. Common mode rejection ratio.
 - d. Short channel
 - e. Slew Rate
 - f. Subthreshold current
 - g. Current Mirror.

- Q-2 Attempt all questions (14)**
- (a) Explain in detail developing of the Beta-multiplier reference.
 - (b) Explain Low-Voltage (Wide-Swing) Cascode in detail.

OR

- Q-2 Attempt all questions (14)**
- (a) Explain in detail the DC operation of Source-Coupled Pair.
 - (b) Explain Biasing of the Cascode Current Source and its operation.

- Q-3 Attempt all questions (14)**
- (a) Explain Threshold Voltage Mismatch Current Mirror circuit.
 - (b) Explain Diff-amp with a current mirror load.

OR

- Q-3 Attempt all questions (14)**
- (a) Explain Transconductance Parameter Mismatch Current Mirror circuit.
 - (b) Explain the current mirror and its equivalent circuit representation of a current source.



SECTION – II

- Q-4** **Define the following terms** **(07)**
- a. Comparator.
 - b. Clock Skew.
 - c. Phase Noise.
 - d. Timing Jitter.
 - e. Charge pump.
 - f. VCO.
 - g. Adaptive Biasing.

- Q-5** **Attempt all questions** **(14)**
- (a) Explain in detail basic Clocked Comparators.
 - (b) Explain the Positive feedback decision circuit in detail.

OR

- Q-5** **Attempt all questions** **(14)**
- (a) Draw and explain the Preamplification stage of comparator.
 - (b) Explain the CMOS implementation of the Astable multivibrator.

- Q-6** **Attempt all questions** **(14)**
- (a) Explain the basic schematic of the Schmitt trigger using CMOS.
 - (b) Explain the Phase Frequency Detector in detail.

OR

- Q-6** **Attempt all Questions** **(14)**
- (a) Draw and explain Delay Locked Loop in detail.
 - (b) Draw and explain the CMOS peak detector.

