



UNIVERSITY OF SCIENCE AND TECHNOLOGY CHITTAGONG (USTC)

Department of Computer Science and Engineering (CSE)

CT: Assignment

Semester: 7th

Year: October, 2025

Course: EEE 411

Title: VLSI Design

Marks: 30

Figures in the right-hand margin indicate full marks.

01. (a) What is the main motivation behind VLSI technology? Discuss with one example [5] [CLO1] from early and modern processors
(b) Draw and explain the basic structure of a MOSFET. Label all its regions and [5] [CLO1] briefly describe the function of each part.
(c) Explain the three modes of operation of a MOSFET with proper conditions and [5] [CLO1] examples

02. (a) Draw a simple block diagram of the VLSI fabrication process and explain each [5] [CLO2] major step in short
(b) Compare constant-field scaling and constant-voltage scaling. Why is scaling [5] [CLO2] important in VLSI design?
(c) Explain why polysilicon replaced aluminum as the gate material in CMOS [5] [CLO2] technology. Add a labeled diagram of self-aligned silicon gate technology