

Roll No.

3326

**B. Tech. 6th Semester (ECE)
Examination – May, 2023**

CMOS DESIGN

Paper : PCC-ECE-308-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

1. Explain the following : 2.5 × 6 = 15
- (a) Stick diagram
 - (b) Compare NMOS and PMOS transistor
 - (c) Sketch the transmission gate or pass gate
 - (d) MOSFET
 - (e) Latch
 - (f) CMOS

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UNIT – I

- 2. (a) Illustrate ideal I-V characteristics of MOS transistors with necessary diagrams. 8
- (b) Explain RC delay model. 7
- 3. Write short notes and draw stick diagram on the following :
 - (a) CMOS Inverter 7
 - (b) NAND Gate 8

UNIT – II

- 4. (a) Compare the static CMOS inverter and Pseudo-nMOS inverters. 8
- (b) Explain about the dynamic cascode voltage switch logic with neat diagram. 7
- 5. (a) Explain the following dynamic circuits. 8
 - (i) Domino logic
 - (ii) Dual-rail Domino logic
- (b) Classify the various Static CMOS circuits for combinational circuits. 7

UNIT – III

- 6. (a) Discuss in detail about various pipelining techniques and explain in detail. 7
- (b) Sketch the sense amplifiers based CMOS circuit. 8
- 7. (a) Write about Schmitt trigger and its properties. 8
- (b) What is Astable sequential circuits. 7

UNIT – IV

- 8. Explain the following : 15
 - (i) Shifters
 - (ii) ALUs
- 9. (a) Design a one transistor DRAM cell. 7
- (b) Draw and explain the architecture of large memory array. 8