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 : $2.5 \times 6 = 15$

(a) Stick diagram

(b) Compare NMOS and PMOS transistor

(c) Sketch the transmission gate or pass gate

(d) MOSFET

(e) Latch

(f) CMOS

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
