Question Paper Code: 59310

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Elective

Electrical and Electronics Engineering

15UEE910– VLSI Design and Architecture

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

PART A - (10 x 2 = 20 Marks)

Answer Any ten of the Following Questions

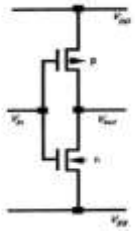
1.	Explain the impact of mobility degradation and velocity saturation.	CO1 - U
2.	Compare NMOS& PMOS Transistor.	CO1 - U
3.	Write the Current Equation of NMOS transistor which operates in Saturation in region	CO1– U
4.	Define design margin.	CO2 –R
5.	Recommend some methods to reduce dynamic power dissipation.	CO2 – An
6.	List various sources of leakage currents.	CO2 – R
7.	List out the techniques used for low power logic design.	CO3 –R
8.	Compare latch and Filp-flop.	CO3 – U
9.	Define Clock skew and clock jitter.	CO3 – R
10.	Compare CLA with RCA.	CO4 –U
11.	Why do we prefer Booth's Algorithm ?	CO4- U
12.	List out the components of datapath.	CO4 – R
13.	What are the types of conditional statements in Verilog?	CO5 – R
14.	List out the bitwise operators in Verilog.	CO5 – R
15.	Compare module and instance.	CO5 - U

PART – B (5 x 16= 80Marks)

16.	(a) Summarize the non-ideal I-V characteristics of MOS Transistor with necessary equations.	CO1 - U

Or

(b) Illustrate the working of the given circuit in various operating regions based on the input voltage levels with necessary equations and diagrams. CO1 - U



17. (a) Sketch a static CMOS gate computing Y = complement[(A + B + C) · D]. CO2 - App

Or

(b) Design 2:1 Multiplexer using Transmission gate. CO2 - App

18. (a) Explain the operation of True Single Phase Clocked Register. CO3 - U

Or

(b) Explain the concept of timing issues and pipeline. CO3 - U

19. (a) Design a 4 bit full adder using Carry look ahead adder. CO4 - App

Or

(b) Design 16 bit carry bypass and carry select adder and discuss their features CO4 - App

20. (a) Develop verilog code to design 3 - bit Encoder using data flow modeling. CO5 - C

Or

(b) Develop Verilog code to design 4 - bit Encoder using behavioural modeling. CO5 - C