A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59501

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Elective

Electronics and Instrumentation Engineering

15UEI901– VLSI SYSTEM DESIGN

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. In MOS transistors, _____ is used for their gates. CO1- R

   (a) Metal (b) Polysilicon (c) Silicon-di-Oxide (d) Gallium

2. The photoresist layer is exposed to CO1- R

   (a) Visible Light (b) Infra Red Light (c) Ultraviolet Light (d) LED

3. Which color is used for n-diffusion? CO2- R

   (a) Red (b) Blue (c) Yellow (d) Green

4. The transistors used in BiCMOS are: CO2- R

   (a) BJT (b) MOSFET (c) Both BJT and MOSFETs (d) JFET

5. In clocked CMOS logic, output in evaluated in CO3- R

   (a) On Period (b) Off Period (c) Both Periods (d) Half of On Period

6. Multipliers are built using CO3- R

(a) Binary Adders (b)Binary Subtractors (c) Dividers (d) Multiplexers

7. PLA contains CO4- R

(a) AND and OR arrays (b) NAND and OR arrays

(c) NOT and AND arrays (d) NOR and OR arrays

8. Which type of device FPGA are? CO4- R

(a) SLD (b) SROM (c) EPROM (d) PLD

9. The full form of VHDL is CO5- R

(a)Very High Descriptive Language (b)Very High Definition Language

(c)Variable Definition Language (d) None of the Mentioned

10. A decimal counter has _____ states. CO5- R

(a) 5 (b)10 (c) 15 (d) 20

PART – B (5 x 2= 10Marks)

11. Define body effect. CO1- U
12. Mention techniques to reduce switching activity. CO2- R
13. What is transmission gate? CO3- R
14. List the steps used for design flow in VLSI. CO4 -R
15. What is subprogram? CO5- U

PART – C (5 x 16= 80Marks)

16. (a) Discuss in detail about the modes of operation of MOS transistor with necessary equations. CO1- U (16)

Or

	(b)	Explain the different steps involved in the fabrication of NMOS with a neat diagram.	CO1- U	(16)
17.	(a)	Determine the pull up to pull down ratios of NMOS inverter.	CO2- App	(16)
		Or		
	(b)	(i) Label the stick diagram for NAND and NOR gate.	CO2- Ana	(10)
		(ii) Discuss about any three layout design rules.	CO2- Ana	(6)
18.	(a)	Explain the domino and dual rail domino logic families with neat diagram.	CO3- U	(16)
		Or		
	(b)	Discuss in detail about the concepts of high speed adders.	CO3- Ana	(16)
19.	(a)	What is programmable logic devices? Explain the different types of PLD in detail	CO4- U	(16)
		Or		
	(b)	Explain about building block architecture of FPGA.	CO4- U	(16)
20.	(a)	Explain in detail about the design procedure of RTL.	CO5- U	(16)
		Or		
	(b)	(i) Construct a VHDL code for JK Flip flop.	CO5- App	(8)
		(ii) Develop a VHDL program for 4:1 MUX	CO5- App	(8)