Reg. No. : | | | | | | | | | | |

Question Paper Code: 47504

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

Seventh Semester

Electronics and Instrumentation Engineering

14UEI704 - VLSI SYSTEM DESIGN

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The limitations of scaling are

   (a) Broad channel effects (b) narrow channel effects

   (c) interference effects (d) none of the above

2. Source and drain in nMOS device are isolated by

   (a) A single diode (b) Two diodes (c) Three diodes (d) Four diodes

3. If n-transistor conducts and has large voltage between source and drain, then it is said to be in _____ region

   (a) Linear (b) Saturation (c) Non saturation (d) Non saturation

4. In basic inverter circuit, _____ is connected to ground

   (a) Source (b) Gates (c) Drain (d) Resistance

5. In dynamic CMOS logic _____ is used

   (a) Two phase clock (b) Three phase clock
   (c) One phase clock (d) Four phase clock

6. Which multiplier is very well suited for twos complement numebers?

(a) Baugh-wooley algorithm (b) Wallace trees

(c) Dadda multipliers (d) Modified booth encoding

7. Which type of PLD should be used to program basic logic functions?

(a) PLA (b) PAL (c) CPLD (d) SLD

8. Which type of device FPGA are?

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

9. What do VHDL stand for?

(a) Verilog hardware description language (b) VHSIC hardware description language

(c) very hardware description language (d) VMEbus description language

10. In VHDL, which class of scalar data type represents the values necessary for a specific operation?

(a) Integer types (b) Real types (c) Physical type (d) Enumerated types

PART - B (5 x 2 = 10 Marks)

11. What is depletion mode operation MOS?

12. What is stick diagram? What are the uses of stick diagram?

13. What is a multiplier circuit?

14. What is programmable logic array?

15. What is LUT

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about MOS transistor with the working operation of enhancement mode and depletion mode. (16)

Or

(b) Explain in detail about the scaling concept of MOS Transistor (16)

17. (a) Explain about DC Characteristics of CMOS inverter circuit with neat diagram. (16)

Or

(b) Explain in detail about the Stick Diagram and layout diagram. (16)

18.(a) Discuss in detail about the Dynamic CMOS design. (16)

Or

(b) Explain multiplication with an example and discuss the types of multipliers. (16)

19. (a) Explain in detail about FPGA Interconnecting Procedure. (16)

Or

(b) Explain in detail about Floor planning, Routing &Placement. (16)

20. (a) Write VHDL testbench code for 4:1 multiplexer. (16)

Or

(b) Write VHDL program for Half adder & Full adder. (16)

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