

VLSI Unit 1 University Questions

Part A

What do you mean by hazards in digital circuits?

Define glitch in digital circuits.

Draw the circuit diagram of NMOS inverter and CMOS inverter.

Define half adder with circuit diagram.

Draw the AND gate circuit using CMOS.

What are races? What are its types?

Compare combinational and sequential circuits.

Draw the block diagram of an encoder. State a few applications.

Draw the CMOS NOT gate circuit.

Draw the CMOS transmission gate.

Draw the CMOS NAND gate and explain with truth table.

Draw the CMOS AND gate and explain with truth table.

Part B

(a) Draw the CMOS AND, OR, inverter and explain with truth table.

(Or)

(b) Implement the function  $F = \{1, 2, 3, 5, 7, 10, 13\}$  with minimal gates.

- (a) (i) Construct a full adder using  $3 \times 8$  decoder.  
(ii) Draw the logic diagram of a single bit magnitude comparator with truth table.

(Or)

- (b) (i) Implement the function  $F = \sum m(0,1,2,3,4,8,9,12)$  with minimal gates.  
(ii) Implement the above function with a 4:1 multiplexer (mux).

- (a) (i) Implement the function  $F = \{0, 2, 3, 7\}$  with minimal gates.  
(ii) Implement the above function with multiplexer.

(Or)

- (b) Implement the function  $F = \{1, 2, 3, 5, 7, 10, 13\}$  with don't care function 4&6 with minimal gates.