

B.E DEGREE EXAMINATIONS: NOV/DEC 2010

Seventh Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U07EE505: Digital Logic Circuits

Time: Three Hours**Maximum Marks: 100****Answer All Questions:-****PART A (10 x 1 = 10 Marks)**

- Convert the binary number $(10011101)_2$ to Octal number.
 - 34_{10}
 - 235_{10}
 - 467_{10}
 - 98_{10}
- Two's complement of $(110101)_2$ is _____.
 - 001011
 - 000111
 - 111000
 - 110011
- The logical expression of AND gate is _____.
 - $Y=A+B$
 - $Y=AB'$
 - $Y=AB$
 - $Y=A'B'$
- The logical expression of X-OR gate is _____.
 - $Y=AB'+A'B$
 - $AB+AB'$
 - $A'B+AB$
 - $A'B'+AB$
- Flip flop is defined as
 - Latch
 - Memory element
 - Register
 - Latch with clock input.
- T flip flop is obtained from JK flip flop when _____.
 - $J>K$
 - $J<K$
 - $J=K$
 - $J=J+K$.
- The sequential logic circuit is
 - Asynchronous circuit
 - Synchronous circuit
 - Combinational circuit with memory element.
 - none of these
- In synchronous counter all the flip flops are triggered
 - Simultaneously
 - at different time
 - one by one
 - None of the above.
- TTL is _____.
 - Transistor Logic
 - Transistor-Transistor Logic
 - Transistor Diode Logic
 - None of the above.
- PLA can be designed with _____ AND array and _____ OR array.
 - Programmable, Fixed
 - Fixed, Programmable
 - Programmable, Programmable
 - None of the above.

PART B (10 x 2 = 20 Marks)

- Given two binary number $X=1010100$ and $Y=1000101$ and find 'Y-X' using 2's complement.
- Simplify $xy+x(wz+wz')$.

13. Give the difference between decoder and demultiplexer.
14. Draw the circuit diagram for 2 input OR gate using diodes.
15. Write the excitation tables for T flip flop.
16. What is state reduction?
17. How critical race in asynchronous sequential circuits can be eliminated?
18. What are the different of types operation in asynchronous sequential circuits?
19. Differentiate the SRAM and DRAM.
20. What is the use of memory decoding circuit in memory?

PART C (5 x 14 = 70 Marks)

21. a) Using K-map simplify the function

$$F(A,B,C,D,E)=\sum m(1,4,8,10,11,20,22,24,25,26)+d(0,12,16,17).$$

(OR)

- b) Find minimum sum of product function using Quine MC-Clusky method.

$$F(W,X,Y,Z)=\sum m(0,2,3,6,7,8,10,12,13).$$

22. a) Design and implement the following using appropriate gate circuits.

(i) 4 to 1 multiplexer. (7)

(ii) Full Adder. (7)

(OR)

- b) Design a Binary to BCD code converter and also a BCD to Binary code converter.

23. a) Draw the logic diagram of JK flip flop and explain its operation through its characteristic table and equation.

(OR)

- b) Design a counter with the following repeated binary sequence: 0, 1,2,4,6 using D flip flop.

24. a) What is Hazard? Explain the types of hazards in combinational circuits with an example.

(OR)

- b) Explain with an example, how the critical races can be avoided?

25. a) Write short notes on TTL, ECL and CMOS logic families.

(OR)

- b) (i) Explain the working of a RAM cell. (7)

- (ii) Write short notes on PLA. (7)
