

C.U.SHAH UNIVERSITY

Winter Examination-2015

Subject Name: Digital Electronics**Subject Code: 4TE03DEL1****Branch: B.Tech(CE,IT,EC)****Semester: 3 Date: 8/12/2015 Time:2:30 To 5:30****Marks :70**

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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- Q-1 Attempt the following questions: (14)**
- a) What do you mean by a bit?
 - b) $(11100)_2 = (\quad)_{10}$
 - c) $(101.101)_2 = (\quad)_{10}$
 - d) $(15.15)_{10} = (\quad)_2$
 - e) $(110011)_2 = (\quad)_8$
 - f) $(6473)_8 = (\quad)_2$
 - g) $(10)_{16} + (12)_{16} = (\quad)_{10}$?
 - h) $(11001100)_2 - (00101010)_2 = (\quad)_2$?
 - i) $(4057.06)_8 = (\quad)_{10}$
 - j) $(11001100)_2 + (00101011)_2 = (\quad)_2$
 - k) $(10A0)_{16} = (\quad)_2$
 - l) 10 Bytes = _____ Nibble.
 - m) 256 Bytes = _____ Bits.
 - n) Draw truth table of NOR gate with two inputs.

Attempt any four questions from Q-2 to Q-8

- Q-2 Attempt all questions (14)**
- (a) Explain Full Adder with its circuit diagram and truth table. 7
 - (b) Discuss Excess-3 code in brief. 3
 - (c) What do you mean by Gray Code? Explain. 4
- Q-3 Attempt all questions (14)**
- (a) Which gates are known as Universal Gates? Justify them as Universal gates with the help of circuit diagrams and truth tables. 7
 - (b) Explain 4X1 Multiplexer and 1X4 Demultiplexer with the help of diagrams and truth tables. 7
- Q-4 Attempt all questions (14)**
- (a) What is a flip-flop? Explain J-K Flip-Flop in detail. 7
 - (b) What is the use of Decoder and Encoder? Explain 8 to 3 line encoder with 7



diagram and truth table.

Q-5	Attempt all questions	(14)
(a)	What is K-Map? Why is it used? Explain 3 variable K-Map with Don't care conditions.	7
(b)	Explain S-R and D Flip-flops in detail.	7
Q-6	Attempt all questions	(14)
(a)	Explain 4 bit Asynchronous counter in detail.	7
(b)	Describe 4 bit Serial-In Serial-Out shift register with the help of diagram.	7
Q-7	Attempt all questions	(14)
(a)	Explain TTL logic families in detail.	7
(b)	What do you mean by Non Volatile memory? Explain Read only memory in detail.	7
Q-8	Attempt all questions	(14)
(a)	Simplify $F(X, Y, Z) = \sum (1, 3, 4, 6) + D(0, 2)$ using K-Map.	4
(b)	Simplify $F(A, B, C, D) = \sum (1, 3, 4, 6, 8, 11, 12)$ using K-Map.	5
(c)	State and explain De Morgan's theorem with the use of logic gates.	5

