

# 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)  $(11100)_2 = ( )_{10}$
  - c)  $(101.101)_2 = ( )_{10}$
  - d)  $(15.15)_{10} = ( )_2$
  - e)  $(110011)_2 = ( )_8$
  - f)  $(6473)_8 = ( )_2$
  - g)  $(10)_{16} + (12)_{16} = ( )_{10}?$
  - h)  $(11001100)_2 - (00101010)_2 = ( )_2?$
  - i)  $(4057.06)_8 = ( )_{10}$
  - j)  $(11001100)_2 + (00101011)_2 = ( )_2$
  - k)  $(10A0)_{16} = ( )_2$
  - 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.

<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
(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
<b>Q-6</b>	<b>Attempt all questions</b>	<b>(14)</b>
(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
<b>Q-7</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	Explain TTL logic families in detail.	7
(b)	What do you mean by Non Volatile memory? Explain Read only memory in detail.	7
<b>Q-8</b>	<b>Attempt all questions</b>	<b>(14)</b>
(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

