Enrollment No: _____ Exam Seat No:_____

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.

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**