

# C. U. SHAH UNIVERSITY

## Winter Examination-2019

Subject Name : Digital Electronics

Subject Code : 4TE03DEL1

Branch: B.Tech (CE)

Semester : 3

Date : 20/11/2019

Time : 02:30 To 05:30

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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<b>Q-1</b>	<b>Attempt the following questions:</b>	<b>(14)</b>
	a) Draw truth table for X-OR gate.	(01)
	b) $(3AB2)_{16} = ( \quad )_2$ .	(01)
	c) Define Byte.	(01)
	d) Find 2's complement of 01000.	(01)
	e) If there are 3 inputs in AND gate than how many outputs are possible?	(01)
	f) $(1906)_8 = ( \quad )_{10}$ .	(01)
	g) Find binary addition of $1011.01 + 11.011$	(01)
	h) Convert gray code into binary code for 1010.	(01)
	i) Subtract $(1010)_2$ from $(1111)_2$ using 1's complement method.	(01)
	j) $(010100111110)_2 = ( \quad )_8$ .	(01)
	k) $(3509)_{10} = ( \quad )_{16}$ .	(01)
	l) Find 1's complement of 10110101.	(01)
	m) Draw truth table for 3 to 8 decoder.	(01)
	n) $(752)_8 = ( \quad )_{16}$ .	(01)

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

<b>Q-2</b>	<b>Attempt all questions</b>	<b>(14)</b>
	(a) State and explain De-Morgan's theorem using truth table.	(07)
	(b) What do you mean by logic gate? Draw circuit diagrams and truth tables for AND, OR and NOT gates.	(07)
<b>Q-3</b>	<b>Attempt all questions</b>	<b>(14)</b>
	(a) Explain full subtractor with help of truth table and circuit diagram.	(07)
	(b) Which gates are considered as Universal Gates? Explain them with the help of truth table and circuit diagram.	(07)
<b>Q-4</b>	<b>Attempt all questions</b>	<b>(14)</b>
	(a) What do you mean by De-Multiplexer? Explain $1 \times 4$ multiplexer using diagram and truth table.	(07)
	(b) Define k-map. List down various types of k-map combinations. Simplify $F(A,B,C,D) = \sum m(1,3,5,7,9) + d(6,12,13)$ using k-map.	(07)
<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
	(a) What do you mean by flip flop? Mention its various types. Explain any	(07)



- one of them using truth table and circuit diagram.
- Q-6**
- (b) Explain 4 bit asynchronous counter in detail. (07)
- Attempt all questions** (14)
- (a) What do you mean by Multiplexer? Explain  $4 \times 1$  multiplexer using diagram and truth table. (07)
  - (b) Define encoder and decoder. Explain 8 to 3 line encoder using diagram and truth table. (07)
- Q-7**
- Attempt all questions** (14)
- (a) Explain Sum of Product and simplify  $F(A, B, C) = \sum(1, 4, 5, 6, 7)$ . (07)
  - (b) Explain Product of Sum and simplify  $\prod(0 \text{ to } 15)$ . (07)
- Q-8**
- Attempt all questions** (14)
- (a) Explain TTL logic families in detail. (07)
  - (b) Explain ECL logic gate families in detail. (07)

