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# C. U. SHAH UNIVERSITY Summer Examination-2020 

## Subject Name : Digital Electronics

Subject Code : 4TE03DEL1
Semester : 3

Date : 03/03/2020
Branch: B.Tech (CE)
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.

Q-1 Attempt the following questions:
a) If OR gate has 4 inputs, than how many combinations for output is possible?
b) How many bytes is equal to 65536 bits?
c) $(\mathrm{A} 59 \mathrm{C})_{16}=(\quad)_{8}$
d) $(10110.1011)_{2}=(\quad)_{10}$
e) State De-Morgan's Theorem.
f) Convert binary code into gray code for 1001101 .
g) $(54 \mathrm{~A})_{16}=(\quad)_{10}$
h) $(670)_{10}=(\quad)_{8}$
i) Find binary addition for $11011.010+101.1011$
j) $(11010111.111101110)_{2}=(\quad)_{8}$
k) Draw truth table for Ex-NOR gate for two inputs.
l) $(1011011)_{2}-(10010)_{2}=(\quad)_{2}$
m) Which gates are considered as universal gates?
n) Draw truth table for 8 to 3 encoder.

Attempt any four questions from $\mathbf{Q - 2}$ to $\mathbf{Q - 8}$

## Q-2 Attempt all questions

(a) What is logic circuit? Draw circuit diagram and truth tables of basic logic gates.
(b) Draw circuit diagram and truth table for Universal Gates.
(c) Draw circuit diagram and truth table to prove De-Morgan's theorem.

Q-3 Attempt all questions
(a) What is flip flop? Explain J-K flip flop in detail.
(b) Explain full adder with circuit diagram and truth table.

Q-4 Attempt all questions
(a) Simplify following Boolean function using K-map $\mathrm{F}(\mathrm{w}, \mathrm{x}, \mathrm{y}, \mathrm{z})=$ $\sum(1,3,7,11,15)$ and it has don't care conditions $\mathrm{d}(\mathrm{w}, \mathrm{x}, \mathrm{y}, \mathrm{z})=(0,2,5)$.
(b) Simplify following Boolean function using K-map $\mathrm{F}(\mathrm{d}, \mathrm{e}, \mathrm{f}, \mathrm{g})=$ (1,3,5,6,7,11,12,14,15)
Q-5 Attempt all questions ..... (14)
(a) Explain 3 to 8 line decoder with circuit diagram and truth table. ..... (07)
(b) Explain $1 \times 4$ demultiplexer in detail. ..... (07)
Q-6 Attempt all questions ..... (14)
(a) What is Register? Explain 8-bit Shift Register with Circuit. ..... (07)
(b) What is Asynchronous Counter? Explain 8-bit Shift Counter. ..... (07)
Q-7 Attempt all questions ..... (14)
(a) Explain SOP and POS with suitable diagram. ..... (07)
(b) Explain Master Slave flip flop in detail. ..... (07)
Q-8 Attempt all questions(14)
(a) Write a note on MOS and CMOS. ..... (07)
(b) Explain ECL logic gate families in detail. ..... (07)

