## Summer Examination-2022

## Subject Name: Digital Circuits

Subject Code: 4TE03DCI1

## Branch: B.Tech (Electrical)

Semester: 3
Date: 25/04/2022
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.
a) Which of the following is a type of digital logic circuit?
a) Combinational logic circuits
b) Sequential logic circuits
c) Both a \& b
d) None of the mentioned
b) Which of the following is an example of a digital Electronic?
a) Computers
b) Information appliances
c) Digital cameras
d) All of the mentioned
c) $\qquad$ and $\qquad$ gates are universal gates?
a)NAND and AND
b)NAND and NOR
c) NAND and OR
d) None of the above
d) What are the advantages of the digital systems?
a)High-efficiency
b)Uses less bandwidth
c) Encryption
d) All of the above
e) In which gate the output is high when any one or all inputs are high?
a)AND
b)NAND
c) $O R$
d) NOR
f) The 8 bits is equal to the $\qquad$ bytes.
a)One-byte
b)Two-bytes
c) Three-bytes
d) None of the above
g) The Boolean algebra is given by
a)Ronald J Tocci
b)Pascal
c) George Boole
d) None of the above
h) What is the base of octal?
a) 2
b) 8
c) 12
d) 10
i) What are the basic gates?
a)AND
b)NOT
c) $O R$
d) All of the above
j) How many bits does one nibble have $\qquad$
a) 1-bit
b)4-bits
c) 3-bits
d)2-bits
k) $\qquad$ gate is a universal gate
a)NOT
b)NOR
c) AND
d) Exclusive OR
I) The parity is used to $\qquad$
a)Increase the switching operation
b)Reduce switching operation
c) Detect errors
d) None of the above
m) How many bits does one word have?
a) 4 bits
b) 8 bits
c) 16 bits
d) 32 bits
n) The counter is used to count the number of $\qquad$
a)Digits
b)Bits
c) Pulses
d) None of the above

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

Q-2 Attempt all questions
a) Explain OR,NOR, Ex OR and Ex NOR gate with truth table.
b) What are the advantages of digital system over analog system?


Q-3 Attempt all questions
a) Convert decimal to binary system:

$$
\text { (1) } 105.15 \text { (2) } 52
$$

b) Convert octal to hexadecimal system:
(1) 756.603 (2) B9F.AE

Q-4 Attempt all questions
a) Reduce the expression $\mathrm{A}+\mathrm{B}[\mathrm{AC}+(\mathrm{B}+\mathrm{C}) \mathrm{D}]$.
b) Write short note on full subtractor.

Q-5 Attempt all questions
a) Briefly describe the following:
(1) Parallel adder (2) Serial adder.
b) Explain De Morgan's theorem with truth table.

## Q-6 Attempt all questions

a) What are different application of flip-flop?
b) What is flip-flop? Explain S-R flip-flop.

## Q-7 Attempt all questions

a) Explain 3 to 8 line decoder circuit.
b) Distinguish between combinational and sequential switching circuits.

Q-8 Attempt all questions
a) Explain difference between MUX and a DEMUX.
b) What is the advantages of a synchronous counter over an asynchronous counter? What is its disadvantages?


