

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - I Computer Science & Engineering : WINTER : 2024
SUBJECT: DIGITAL ELECTRONICS

Day : Friday
Date : 06/12/2024

W-24021-2024

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Assume suitable data **WHEREVER** necessary.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.

Q.1 Perform the following conversions (10)

- a) $(10101101.0111)_2 = ()_8$
- b) $(615.25)_8 = ()_{16}$
- c) $(BC66.AF)_{16} = ()_8$
- d) $(12.125)_{10} = ()_2$
- e) $(A3E)_{16} = ()_{10}$

OR

Q.1 Describe different types of Digital codes and state their application. (10)

Q.2 State different Boolean Laws. (10)

Simplify following expression using Boolean Laws and implement using logic gates.

- i) $Y = (AB + BC).C$
- ii) $Y = ABC + \bar{A} + \bar{A}BC$

OR

Q.2 Simplify following expressions using tabulation method (Quine McCluskey) and implement using logic gates. (10)

$$F(A,B,C,D) = \sum m(0, 2, 3, 6, 7, 8, 10, 13)$$

Q.3 Design 4 bit Gray to Binary code converter. (10)

OR

Q.3 Describe working of 8:1 Multiplexer with suitable circuit diagram and truth table. (10)

Q.4 Design 3 bit synchronous up counter and draw neat timing diagram. (10)

OR

Q.4 Describe different types of flip-flops with truth tables and circuit diagrams. (10)

Q.5 Describe notation of ASM chart. Draw ASM chart and state diagram. (10)

OR

Q.5 Design a sequence detector to detect sequence 1 1 0 1. (10)

Q.6 Describe architecture of PLA with neat block diagram and explain with suitable example. (10)

OR

Q.6 Explain in detail semiconductor memories. (10)
