

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - I COMPUTER SCIENCE & ENGINEERING : SUMMER : 2024
SUBJECT: DIGITAL ELECTRONICS

Day : Tuesday
Date : 14/05/2024

S-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) $(2CD.2F)_{16} = ()_2$
 - b) $(253.25)_8 = ()_{10}$
 - c) $(10110110101)_2 = ()_{16}$
 - d) $(B92)_{16} = ()_8$
 - e) $(375.25)_{10} = ()_2$
- OR**
- Q.1** Illustrate NAND and NOR are universal gates with the help of logic diagrams. (10)
- Q.2** Explain De-Morgan's Theorem in detail with suitable diagram. (10)
- OR**
- Q.2** Simplify the following functions using K-map and implement using logic gates (10)
- i) $f(A,B,C,D) = \sum m(0, 2, 5, 6, 7, 8, 10, 13, 15)$
 - ii) $f(A,B,C,D) = \pi M(0, 1, 2, 4, 5)$
- Q.3** Describe the working of digital comparator and parity generator. (10)
- OR**
- Q.3** Differentiate between Multiplexer and DeMultiplexer. Implement the following function using 8:1 Multiplexer. (10)
- $$F(A,B,C,D) = \sum m(0,3,4,7,8,9,13,14)$$
- Q.4** Describe different modes of shift register and explain its applications (10)
- OR**
- Q.4** What is Ripple counter? Explain in detail. (10)
- Q.5** Design mealy and moore machine with neat diagram. (10)
- OR**
- Q.5** Describe notation of ASM chart. Draw ASM chart and state diagram. (10)
- Q.6** Design BCD to gray code converter using PLA(Programmable Logic Array). (10)
- OR**
- Q.6** Classify semiconductor memories in detail. (10)
