

B. TECH. SEM - III (ELECTRONICS) 2014 COURSE) (CBCS) :
WINTER - 2017
SUBJECT: DIGITAL LOGIC CIRCUITS

Day: **Friday**
Date: **19/01/2018**

Time: **10.00 AM TO 01.00 PM**
Max Marks. **60**

W-2017-2039

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data , if necessary.
- 4) Draw neat diagram **WHEREVER** necessary.

- Q.1** Perform the following using 2's complement method **(10)**
- i) $(9)_{10} - (5)_{10}$ ii) $(4)_{10} - (9)_{10}$
iii) $(-4)_{10} - (-6)_{10}$ iv) $(-6)_{10} - (-2)_{10}$
v) $(5)_{10} - (5)_{10}$

OR

- Q.1** Minimize the following logic function using K – map and verify the answer **(10)**
using the Quine Mccluskey method.
 $Y (A, B, C, D,) = \sum m (0,1, 2, 3, 5, 7, 8, 9, 11, 14)$

- Q.2** Describe the rules for BCD addition with suitable examples and design 1 – **(10)**
digit BCD adder using IC 74LS83.

OR

- Q.2** Design 4 – bit Excess – 3 to BCD code converter and implement using logic **(10)**
gates.

- Q.3** Define the following parameters of logic families and give their typical **(10)**
values of TTL & CMOS.

- i) Noise Margin ii) Propagation delay
iii) Fan – out iv) Figure of merit

OR

- Q.3** a) Describe the working of basic two input TTL NAND gate with neat circuit **(06)**
diagram.

- b) Give a brief note on ECL logic family. **(04)**

- Q.4** a) Define the following terms related to state machine **(06)**

- i) State Table
ii) State diagram
iii) State equation

- b) Differentiate between Moore and Mealy circuit. **(04)**

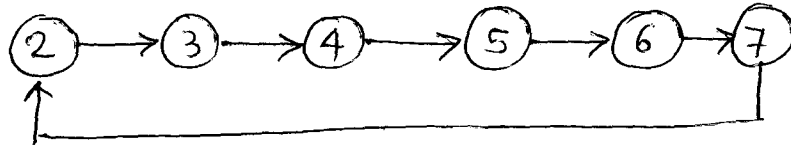
P.T.O

OR

Q.4 Describe the following flip – flops (10)

- i) Clocked R.S.
- ii) J.K.
- iii) D type and T type

Q.5 Design and implement the following sequence generator using T flip – flops (10)



OR

Q.5 Draw the logical diagram of a 4 – bit shift register. Describe how shift left and shift right operation are performed. (10)

Q.6 What is a PLA? Describe the architecture of a PLA. (10)

OR

Q.6 a) Describe the working of TTL RAM cell with the help of neat diagram. (06)

b) Differentiate between EPROM & EEPROM. (04)