B.Tech Sem - IV (2007 Course) (E & TC Engg.) : WINTER - 2017

SUBJECT: DIGITAL ELECTRONICS

Day: **Wednesday** Time: **02.30 PM TO 05.30 PM**

Date: **22/11/2017** **W-2017-2441** Max Marks: 80

N N.B:

1) **Q.No. 1** and **Q.No. 5** are **COMPULSORY**. Out of remaining questions attempt any **TWO** questions in each section.
2) Answer to both the section should be written in **SEPARATE** answer book.
3) Figures to the right indicate **FULL** marks.
4) Assume suitable data if necessary.

SECTION-I

Q.1 **a)** Define following parameters with respect to digital logic families. **(04)**
i) Power dissipation
ii) Fan-out

b) Convert following decimal numbers to equivalent binary numbers. **(05)**
i) $(13.65625)_{10}$
ii) $(131)_{10}$

c) Compare PROM. PAL and PLA. **(05)**

(07)

Q.2 **a)** Draw and explain operation of 2- input CMOS NOR gate. **(06)**

b) Draw and explain the operation of TTL inverter.

Q.3 **a)** Simplify the following Boolean expression using Quine Mc-cluskey method. **(07)**
$F(A, B, C, D)= \Sigma m(1,3, 7,11,15) +d(0,2,5)$.

b) Perform, following arithmetic operations using 2's complement method. **(06)**
i) 35- 46
ii) - 98- 54

Q.4 **a)** Draw and explain the operation of BCD adder. **(07)**

b) Implement the following Boolean expression using 8:1 multiplexer. **(06)**
$F(A, B, C, D)= \Sigma m (0,2,3, 6, 8, 9, 12, 14)$.

SECTION-II

Q.5 **a)** Differentiate between synchronous and asynchronous sequential circuits. **(04)**

b) Draw the logical diagram for 4-bit Johnson counter and explain the operation with timing diagram. **(06)**

c) Compare static and dynamic RAM. **(04)**

Q.6 **a)** Implement mod- 9 ripple down counter using T flip- flop. **(07)**

b) Draw and explain the operation of Master slave JK flip- flop. **(06)**

Q.7 **a)** Draw state table, state diagram for detecting a sequence -------1101----- **(06)**

b) What are different methods of digital to analog conversion? Explain any one method with neat diagram. **(07)**

Q.8 **a)** Draw and explain the operation BIPOLAR SRAM cell. **(06)**

b) Write a note on different of memories. **(07)**