

SE - Sem IV (Biomed.)
Logic Circuits

10/6/14.

QP Code : NP-19842

(3 Hours)

22

[Total Marks : 80

N. B. : (1) Attempt any four questions from six questions.
(2) Figures to the right indicate full marks.

1. Answer the following questions :- 20
 - (a) Convert J-K Flip Flop to T FlipFlop
 - (b) Design a half subtractor with only NAND gates
 - (c) Why is Excess-3 called a self-complementing code
 - (d) What do you understand by positionally weighted codes
 - (e) State and prove 'DeMorgan's Theorem'.
2. (a) Design the following gates :- 8
 - (i) NOR using NAND
 - (ii) NAND using NOR
- (b) Design Gray ($G_3G_2G_1G_0$) to Binary ($B_3B_2B_1B_0$) converter 12
3. (a) Explain the following :- 8
 - (i) Standard and non-standard sop forms
 - (ii) Standard and non-standard pos forms
- (b) Design a 2 bit multiplier (A_1A_0 with B_1B_0) 8
- (c) Explain hazards in combinational circuits. 4
4. (a) Design 32 : 1 Multiplexer using two 16 : 1 multiplexers. 5
- (b) Draw and explain 2 input TTL NAND gate. What are salient features of TTL family. 10
- (c) Explain bidirectional shift register 5
5. (a) Design synchronous mod 4 up-down counter using JK Flipflop 10
- (b) Explain the operation of S-R FlipFlop using NAND gates. What is a race around condition. 10
6. Write short notes on :- 20
 - (1) Hamming code
 - (2) Quine McClusky's technique
 - (3) Counter ICS
 - (4) Shaft position encoding.

Con. 13347-14.