

SE-CO.  
Sem III (old)  
DLDA.

08/12/2014

(OLD COURSE)

QP Code :12312

(3 Hours)

[Total Marks : 100

- N.B.:** (1) Question No. 1 is compulsory.  
(2) Attempt any four from remaining questions.  
(3) Figures to the right indicate full marks.

1. (a) Using Quine-Mc-Cluskey Method, determine the minimal SOP form for  $F(A, B, C, D) = \sum m(4, 5, 8, 9, 11, 12, 13, 15)$ . 10  
(b) Design 4-bit Binary to Gray code converter. 10
2. (a) Implement following expression using single 4:1 mux.  $F(A, B, C, D) = \sum m(2, 6, 8, 12, 13, 14)$ . 10  
(b) Explain the operation of 4-bit universal shift register. 10
3. (a) Draw 2-input TTL NAND gate and explain list important chara. of TTL family. 10  
(b) Design MOD-6 synchronous counter and explain its operation. 10
4. (a) Convert  $(243.63)_8$  to decimal, binary and hexadecimal 10  
(b) Obtain Hamming code for 1010. Prove that hamming code is error detecting and correcting code. 10
5. (a) Simplify following expression using K-map and realize using only NAND gate.  $F(A, B, C, D) = \sum m(1, 2, 3, 8, 9, 10, 11, 14) + d(7, 15)$ . 10  
(b) Simplify following expression using Boolean laws 10  
(i)  $\overline{\overline{AB} + \overline{A} + AB}$  (ii)  $A[B + C(\overline{AB + AC})]$
6. (a) What is Race-Round condition ? How it is overcome in M-S J-K FFs. 10  
(b) (i) Explain difference between asynchronous counter and synchronous counter. 5  
(ii) State and explain any two application of FFs. 5
7. Write short notes on :- 20  
(a) De Morgan's Theorm  
(b) Priority Encoder  
(c) MUX and DEMUX

LM-Con.:10286-14.