

15/12/14

SE-EE. IV (old)  
A.D.I.C.

(OLD COURSE)

QP Code :14459

(3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No.1 is compulsory.  
(2) Attempt any **four** out of remaining **six** questions.  
(3) Assume suitable **data** if **required**.  
(4) **Figures** to right indicate **full** marks.

- 1 (a) Convert (i)  $(97)_{10} + XS - 3$  5  
(ii)  $(96)_{10}$  to gray
- (b) Convert from BCD to Hexadecimal 5  
(i) 402  
(ii) 83
- (c) Draw or gate using only NAND gates. 5  
(d) Explain Error correcting codes. 5
2. (a) Using Quine Mc-clusky method, minimize the boolean expression - 10  
 $F(ABCD) = \sum m (1, 3, 5, 8, 9, 11, 15) + d (2, 13)$   
(b) Explain working of TTL NAND gate circuit. 10  
Draw its transfer characteristic
3. (a) Implement the following using 2 input NOR gates. 10  
(i)  $Y = \bar{A}B + \bar{B}C$   
(ii)  $Z = A \oplus B$  10  
(b) Convert JK FF to T-FF and then SR FF to JK FF.
4. (a) Simplify the following expression using K-map and realise using AND-OR 10  
realization.  
 $F(A, B, C, D) = \sum m (1, 3, 7, 8, 10, 12, 13, 15)$   
(b) Design and implement a 3-bit synchronous up-counter using JK Flip Flap. 10
5. (a) Show that : (i)  $(A + AB)(A + \bar{A}B)(A + C) = A$  10  
(ii)  $AB + \bar{A}C = AB + \bar{A}C + BC$   
(b) How IC 723 can be used as a high voltage regulator. Draw functional diagram of IC 723. 10