NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA

THEORY EXAMINATION ROLL NO._____

Date of the Examination: 07-05-2019 Programme: ....B.Tech

Semester...2nd **Subject: Digital System Design**

Course No.....ITPC-10 **Maximum Marks...50**

Number of Questions to be attempted...05 Time allowed ...3 Hours

Total No. of Questions.....05 **Total No. of Pages used...1**

Instructions: 1. All questions are compulsory.

2. Marks for every part of question are indicated against it.

Q1.	(A) Express the following decimal numbers in (i) BCD code (ii) XS-3 code (iii) Gray code (iv) Hexadecimal code (v) Binary code (vi) Octal Code a) 286 b) 807 (B) Detect and correct errors, if any, in the even parity hamming code words and write the correct code. a) 1100110 b) 0011101 c) 0111110 d) 1010111	6+4
Q2.	(A)Obtain the minimal POS expression using QM method for the following: $f = \pi M(0,1,4,5,9,11,13,15,16,17,25,27,28,29,31) \cdot d(20,21,22,30)$ (B)What is decoder? Explain BCD to seven segment decoder in detail.	5+5
Q3.	(A)What is the limitation of SR flip flop? Convert SR flip flop to JK flip flop. (B)What is race around condition? Explain the working of master-slave JK-flip flop.	5+5
Q4.	(A)What is comparator? Explain the working of 4-bit magnitude comparator. (B) Reduce using mapping the following expression and implement the real minimal expression in universal logic: $F = \sum m(0,2,4,6,7,8,10,12,13,15)$	5+5
Q5.	(A)What is shift register? Explain its types with the help of diagram and truth tables. (B) Explain Johnson Counter with clock pulses.	5+5