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NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA

THEORY EXAMINATION

ROLL NO. _____

Date of the Examination: 19-12-19

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) Convert the decimal number 30 into gray, octal, binary and excess 3 code. (B) Perform the following binary multiplications: (a) $1101 * 1011$ (b) $0101 * 1010$ (c) $100111 * 011011$ (C) State and prove De Morgan's theorem.	4+3+3
Q2.	(A) Obtain the simplified expression using SOP form $F(A,B,C,D) = \sum m(0,1,2,4,5,6,8,9,10,12,13)$ (B) Differentiate between: (a) Half adder and Full adder (b) Synchronous and Asynchronous sequential circuit.	4+6
Q3.	(A) What is the difference between SR flip flop and SR latch? (B) Discuss various types of shift register with suitable examples. (C) Convert D flip flop to T flip flop.	2+5+3
Q4.	(A) What is priority encoder? Explain its working with an example. (B) Design BCD to Excess-3 code converter.	5+5
Q5.	(A) Design asynchronous BCD up counter using JK flip flop. (B) Differentiate between Ring and Johnson counter.	5+5