

## JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION-April 2018

B.Tech 4<sup>th</sup> Semester

COURSE CODE: 10B11EC401

MAX. MARKS: 25

COURSE NAME: Digital Electronics

COURSE CREDITS: 4

MAX. TIME: One Hr 30 Min

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

1. Implement the following boolean function using an 8:1 multiplexer considering D as the input and A,B,C as select lines:  
$$F(A,B,C,D) = A\bar{B} + BD + \bar{B}C\bar{D}$$
 [3]
2. Design a full subtractor circuit using minimum number of 2-input NOR Gates. [2]
3. Explain Look ahead carry adder. What are the advantages of look ahead carry adder over parallel adder. [4]
4. Design a BCD adder. [3]
5. Design a 4-input priority encoder circuit. [3]
6. Design a combinational circuit that accepts a 3-Bit binary number and generates an output binary number equal to square of the input number. [3]
7. Design JK Flip flop. Explain race around condition and how it can be avoided. [3]
8. Design a circuit that tests if the decimal number represented by a 4-bit binary number is a prime number. Use 4:1 mux and minimal number of logic gates. [4]