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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
MAKE-UP EXAMINATION-April 2018
B.Tech 4th 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. What are the advantages of 2's complement over 1's Complement. Perform the following subtraction using 2's complement 0011.1001-0001.1110.Convert the result into decimal number.   [3]

2. Design a full adder circuit using minimum number of 2-input NOR Gates.   [2]

3. Explain 4-bit parallel adder. What are the advantages of look ahead carry adder over parallel adder.   [4]

4. A vehicle seat belt circuit is such that the car should only start if the driver's seat belt is fastened and either the front passenger seat is unoccupied or the front passenger seat is occupied and the passenger seat belt is fastened. Obtain a truth table and reduced boolean equation using karnaugh map.   [3]

5. Design a 4-input priority encoder circuit.   [3]

6. Design 4-bit BCD to XS-3 code converter .   [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]