

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST - 2 EXAMINATION, APRIL 2019
B.Tech IVth Semester

Course Code: 10B11EC401
Course Name: Digital Electronics
Course Credits: 04

MAX. MARKS: 25

MAX. TIME: 1.5 Hrs.

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

1 (a) What is a full adder? Implement a full adder using minimum number of NAND gates. [3 Marks]

(b) Design a code converter to convert a BCD number to Excess-3 number. [3 Marks]

(c) Reduce the following expression using K-map and realize the circuit using AOI logic

$$F = ABC\bar{C} + AB + C + B\bar{C} + D\bar{B}$$

[2 Marks]

2 (a) With the help of a suitable diagram explain the working of a 4-bit look ahead carry adder. [3 Marks]

(b) Design a combinational circuit with three inputs, x , y and z and three outputs A , B and C . When the binary input is 0, 1, 2 or 3, the binary output is one greater than the input. When the binary input is 4, 5, 6 or 7, the binary output is one less than the input. [3 Marks]

(c) With the help of proper truth table, show how will you implement a 5 to 32 line decoder using two 4 to 16 line decoders. [2 Marks]

3(a) Convert the given Boolean expression into canonical form and write the maxterms

$$F = B\bar{A} + A\bar{B}\bar{C} + AB$$

[3 Marks]

(b) Implement the following function using (i) 8:1 MUX (ii) 4:1 MUX [3 Marks]

$$F = \sum m(0,1,2,3,11,12,14,15)$$

(c) Add the two BCD numbers 437 and 126 [2 Marks]

(d) Determine the value of X in $(756.603)_8 = (X)_{16}$. [1 Marks]