CS & IT ENGINEERING

Digital Logic

Combinational Circuit

DPP 01 Discussion Notes

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01 Questions

02 Discussion

Q.1

Let $x = x_1x_0$ and $y = y_1y_0$ be unsigned 2-bit numbers. The function F = 1 if $x > y$ and F = 0 otherwise. The minimal sum of product expression for F, is

A. $y_1y_0 + x_0y_0 + \overline{x_1}\,\overline{x_0}\,\overline{y_1}$

B. $x_0\overline{y_1} + y_1\overline{y_0} + x_1\overline{x_0}$

C. $y_1\overline{x_1} + y_0\overline{x_1}\,\overline{x_0} + y_1y_0\overline{x_0}$

D. $x_1\overline{y_1} + x_0\overline{y_0}\,\overline{y_1} + x_0x_1\overline{y_0}$

$x > y \Rightarrow x_1\overline{y_1} + (x_1 + \overline{y_1})\,x_0\overline{y_0}$

$\Rightarrow \overline{y_1}x_1 + \overline{y_0}x_1x_0 + \overline{y_1}\,\overline{y_0}x_0$

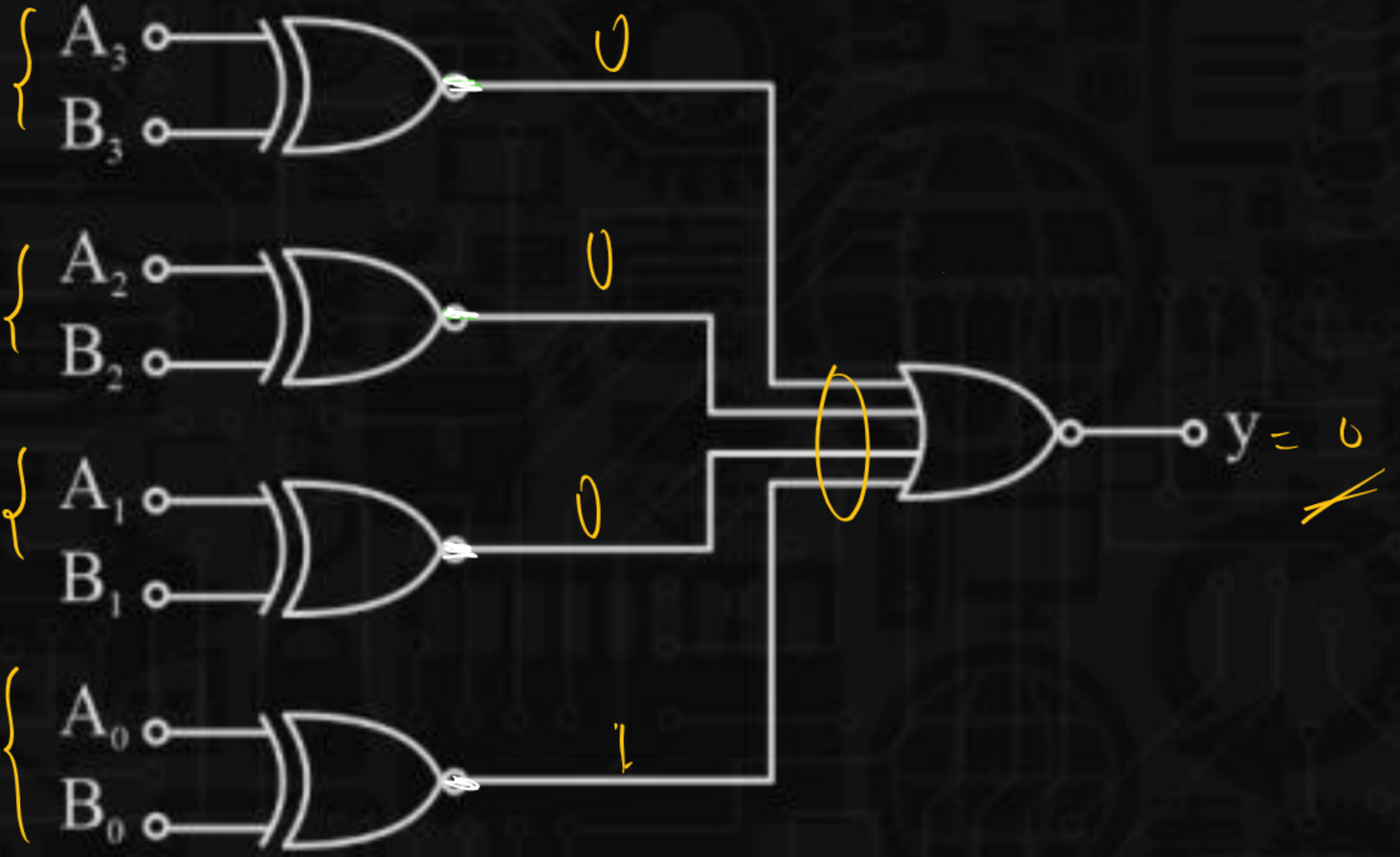
Q.2 The two 4 - bit numbers $A_3\ A_2\ A_1\ A_0$ and $B_3\ B_2\ B_1\ B_0$ are applied to a comparator circuit shown below. A pair of correct input numbers forcing the output y = 0, will be

A. 1100, 1100

B. 0111, 0111

C. 1011, 1011

D. 1100, 1101



Q.3 The output y of a 2-bit comparator I logic-1 whenever the 2-bit A is greater than 2-bit B the number of combination for which the output is logic -1 is ___?

A. 6

B. 2

C. 1

D. 7

(A>B) 2 bit

$2^{2\times2} = 2^4 = 16$

$(A>B) = \frac{2^{2\times2} - 2^2}{2}$

$= \frac{16-4}{2} = 6$

T.C $= 2^{2n}$

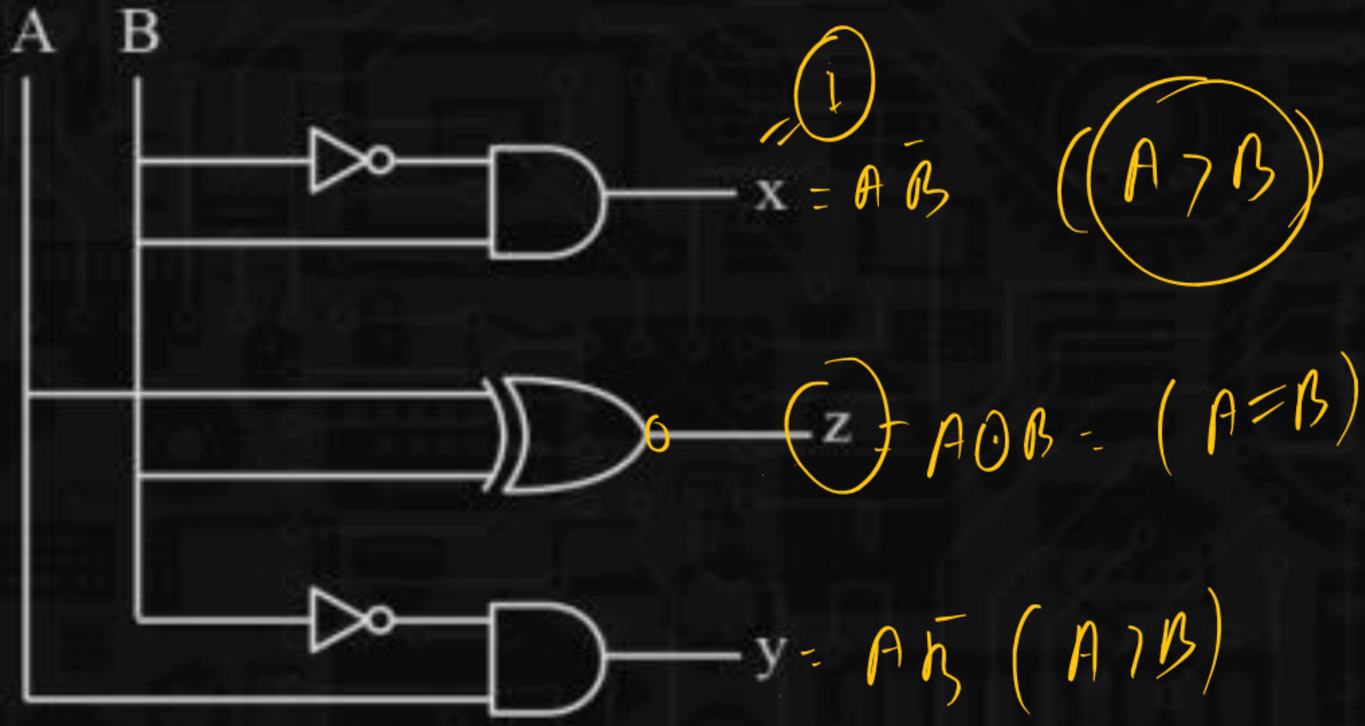
E $= 2^n$

UE $= 2^{2n} - 2^n$

Greater = Less $= \frac{2^{2n} - 2^n}{2}$

Statement for question 4 & 5.

A logic Circuit is given



1

A > B

A ⊙ B = (A = B)

A B̄ (A > B)

Q.4 A pair of correct input number (AB) forcing the output x = 1, will be

A B

A. 10

B. 01

C. 11

D. 00

Q.5 A pair of correct input number (AB) forcing the output z = 1, will be

A. 00, 11

B. 01, 10

C. 00, 10

D. 11,01


THANK YOU GW
SOLDIERS !