



Question-1 (10 Points)

A. A **16-bit** register contains the following: **0111100101000101** Interpret the contents as:

- BCD number → _____
- Binary number → _____

B. Simplify the following Boolean equation using Boolean theorems

$$Y = \bar{A}\bar{B} + \bar{A}B\bar{C} + (\overline{A + \bar{C}})$$

C. Find the sum-of-product function of

$$f(w, x, y, z) = wy + \bar{x}z + \bar{w}y\bar{z}$$

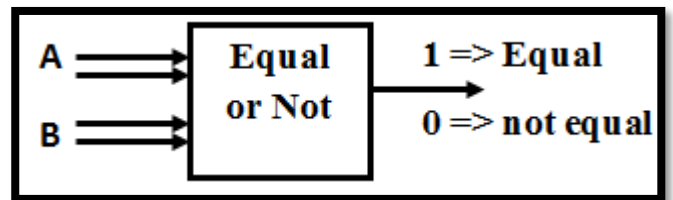
Question-2 (10 Points)

A. Simplify the Boolean function ***F*** together with the don't care conditions ***d*** in (1) sum-of-products form

$$F(w, x, y, z) = \sum (0, 1, 2, 3, 7, 8, 10)$$

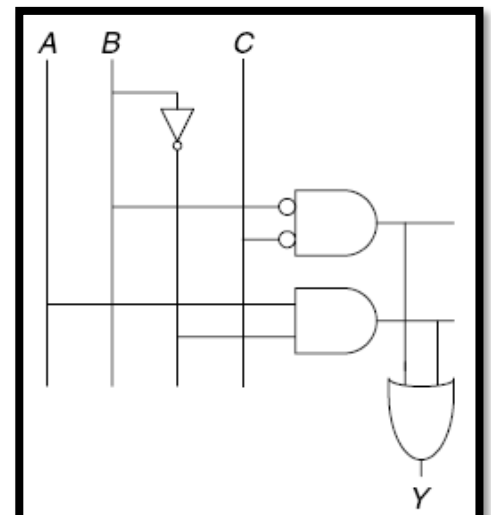
$$d(w, x, y, z) = \sum (5, 6, 11, 15)$$

- B. Design a circuit to perform the comparison between two 2-bit numbers, if they are equal, the output will be one, otherwise the output will be zero



Question-3 (10 Points)

- A. Find the expression for the Boolean function Y



- B. Two 2-bit numbers are to be added. Design a circuit with the two numbers as inputs and their sum is the output

Best wishes
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