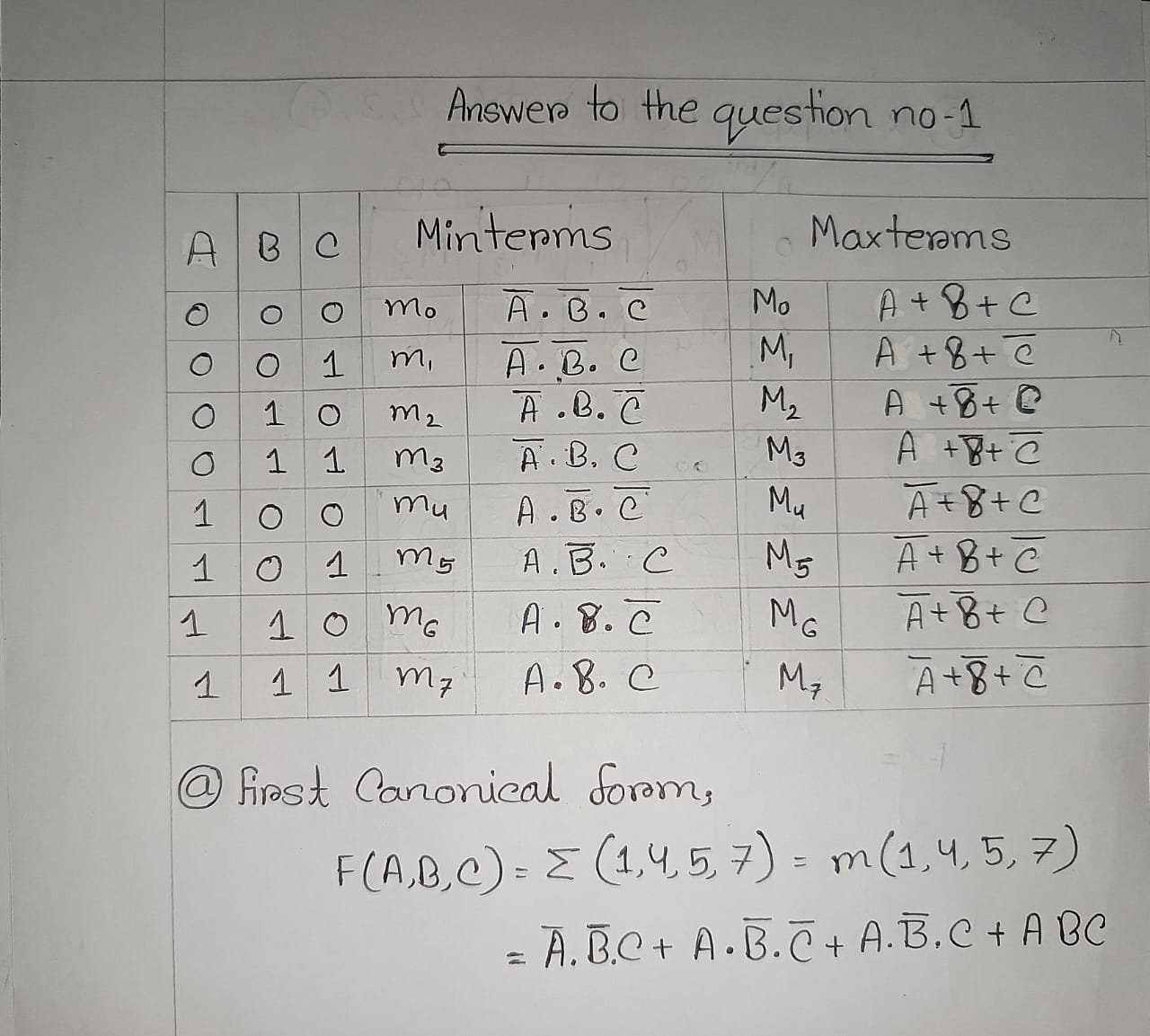
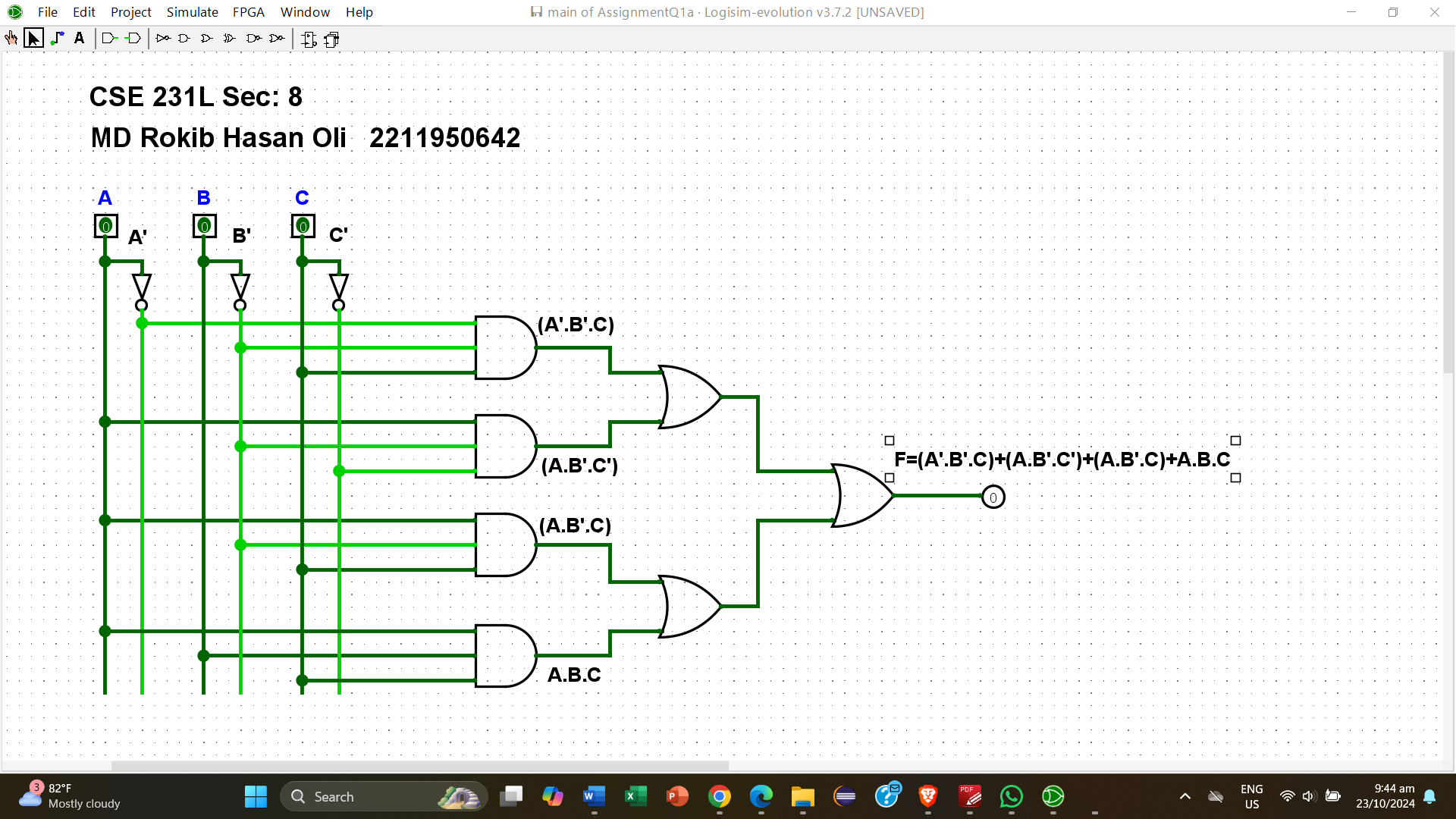
1. 𝐹(𝐴, 𝐵, 𝐶) = ∏(0,2,3,6). Derive the equation of F.  
   a) Using first canonical form. Simulate the circuit.  
   b) Using second canonical form. Simulate the circuit.  
   c) Using K-map. Draw the circuit.  
   d) Draw the IC diagram of the circuit you get from question c.

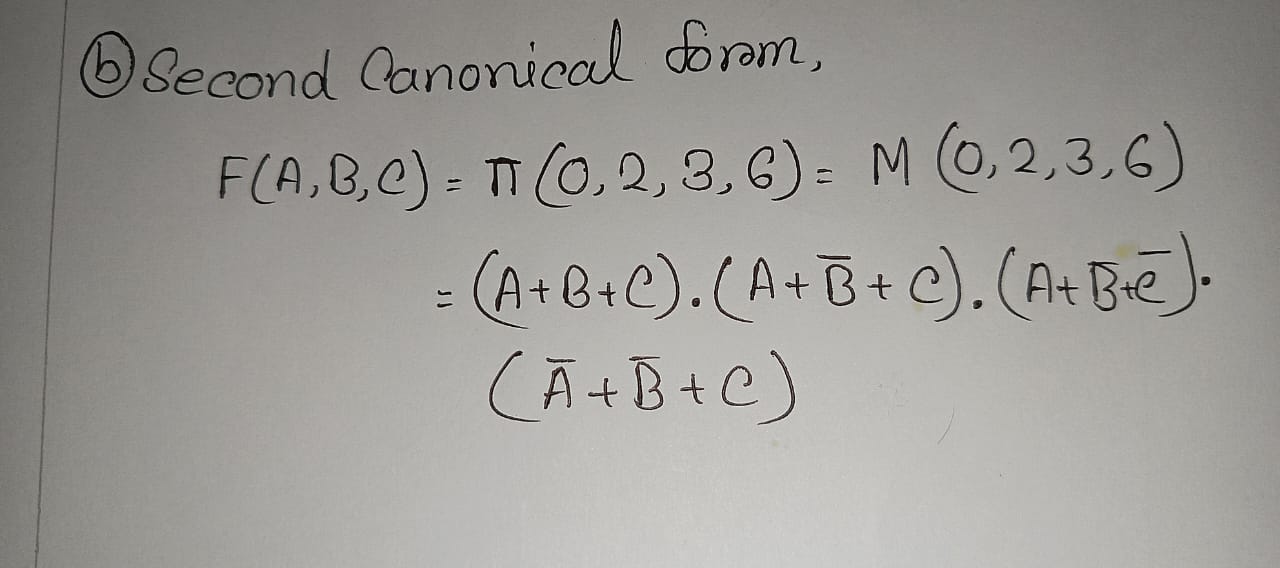
**Answer To The Question No 1**

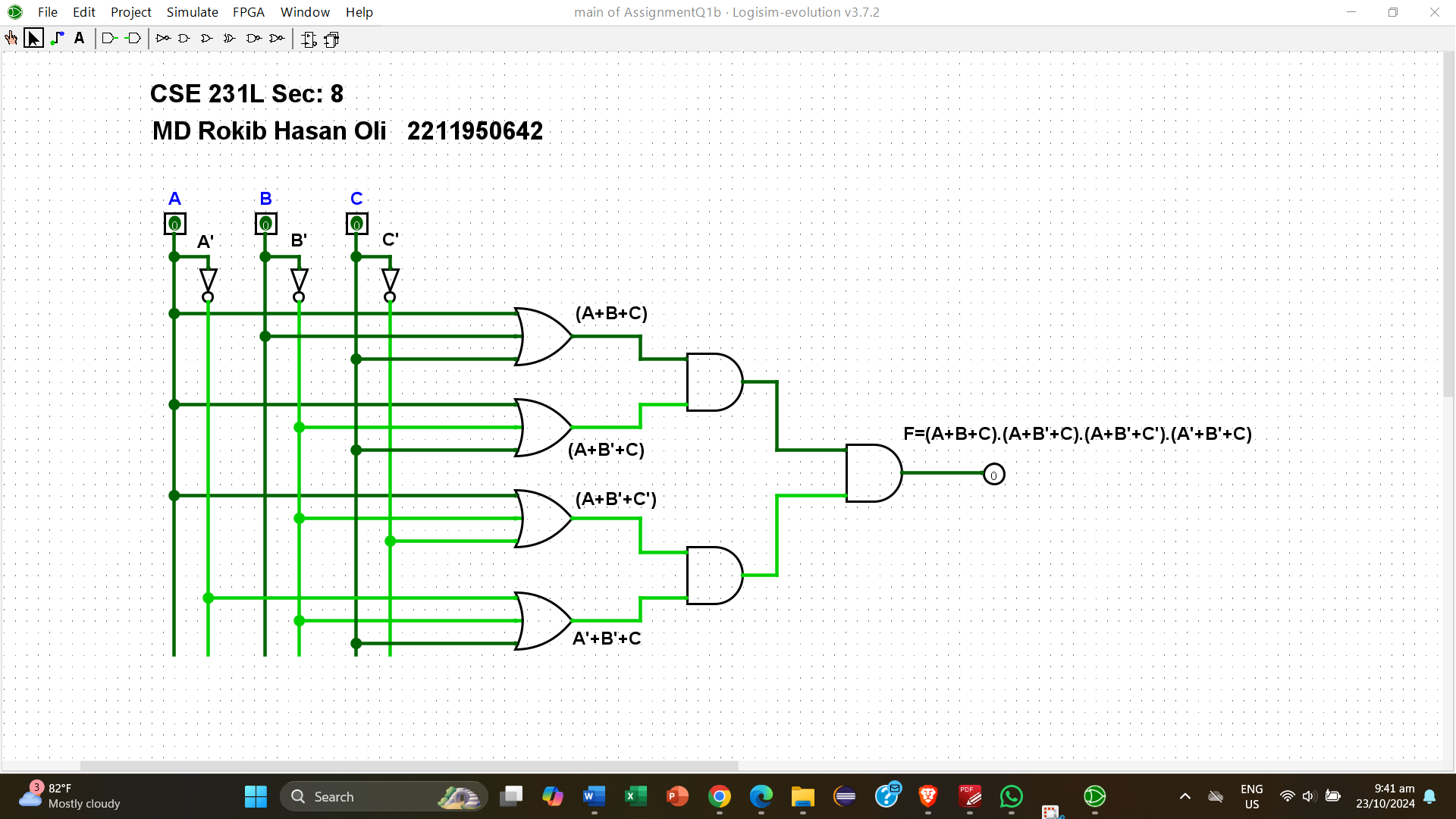
**(a)**



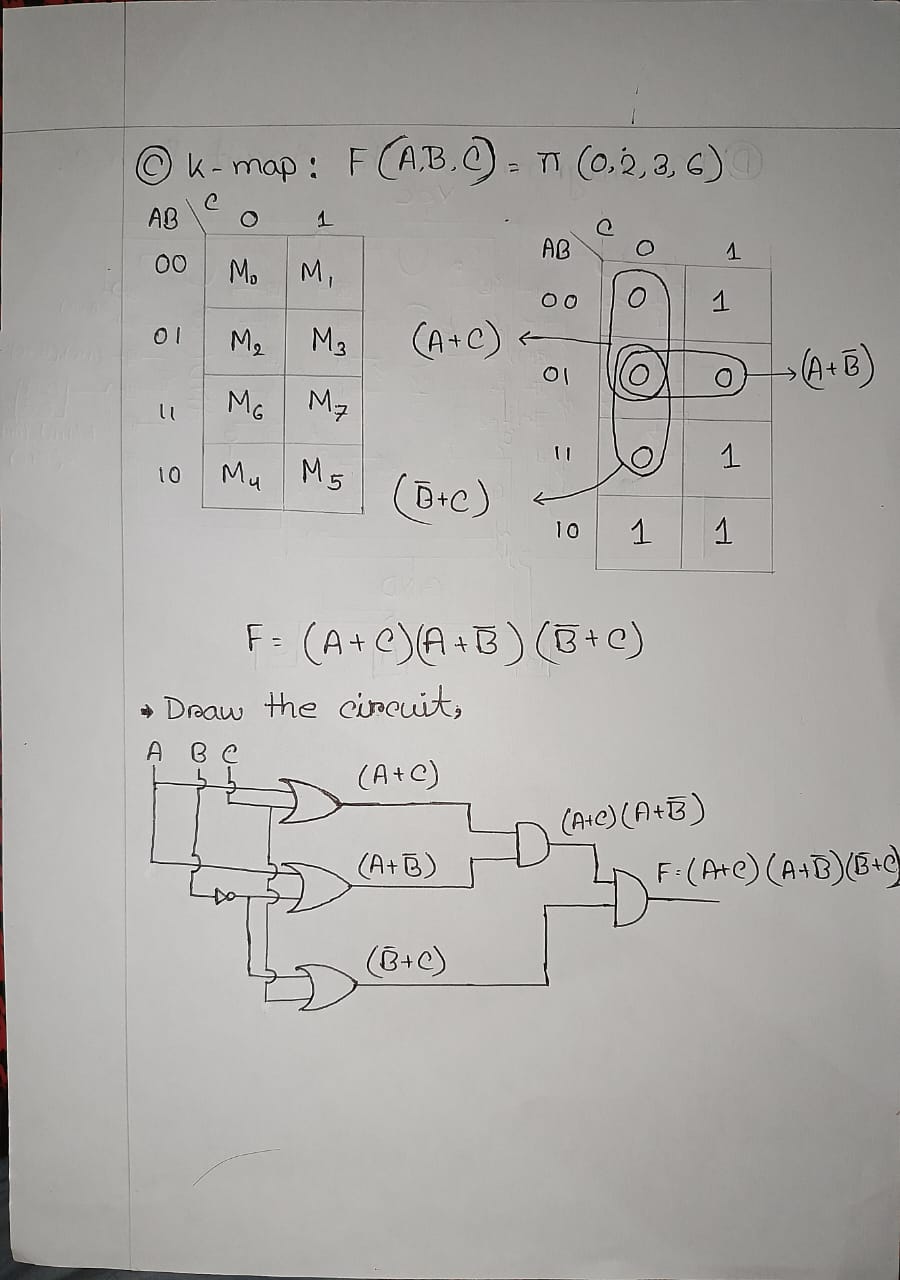


**(b)**

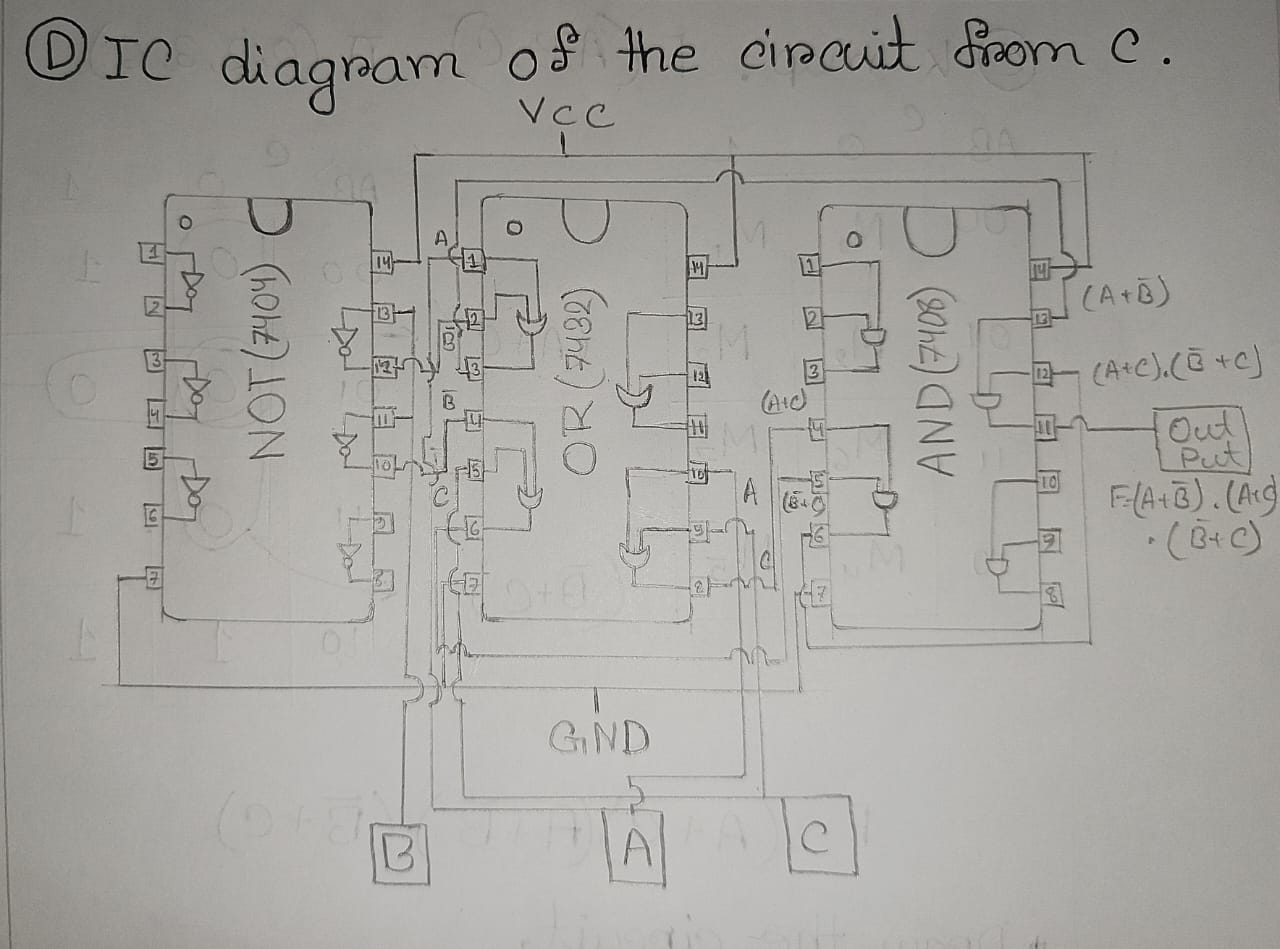




**(c)**



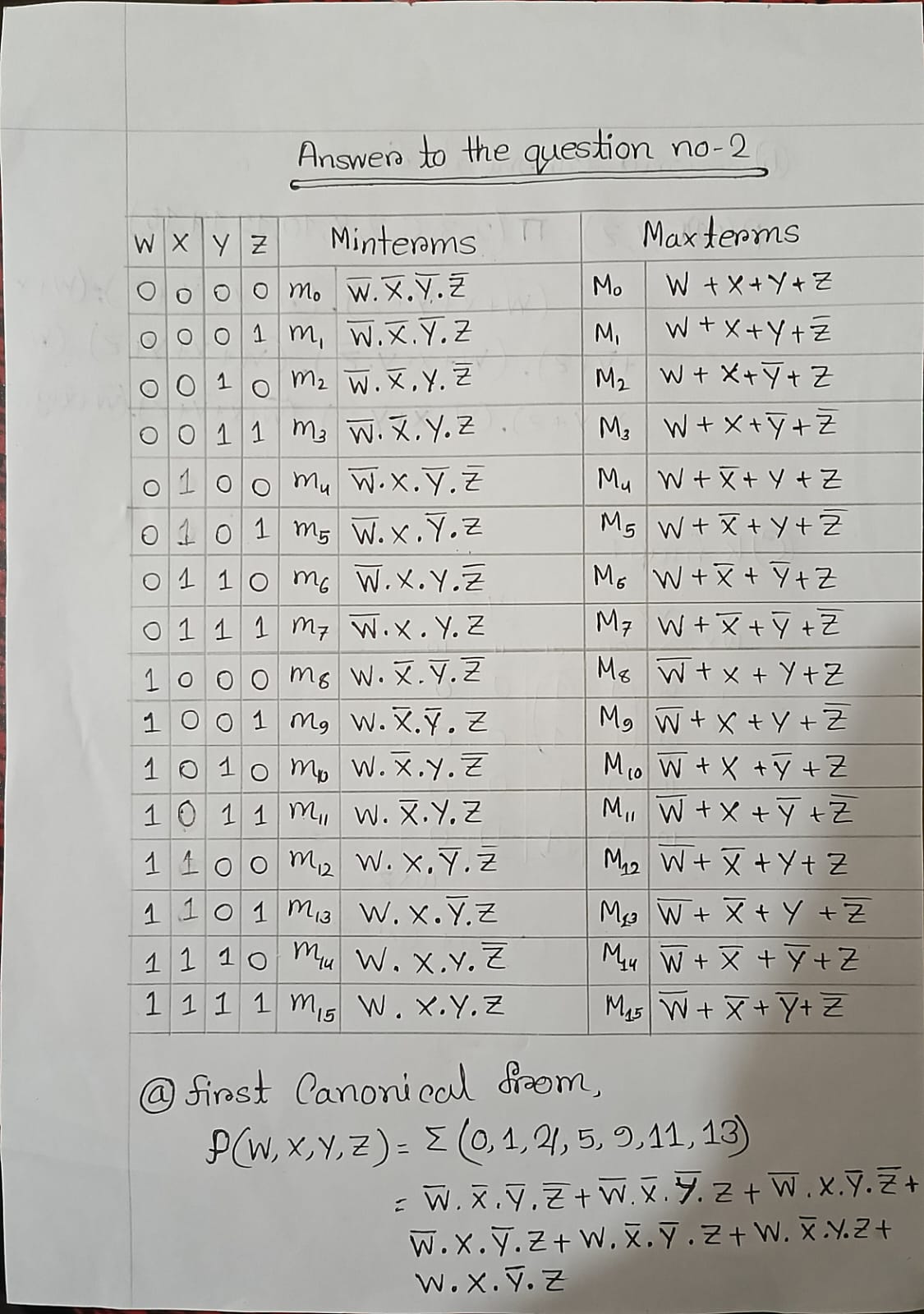
**(d)**



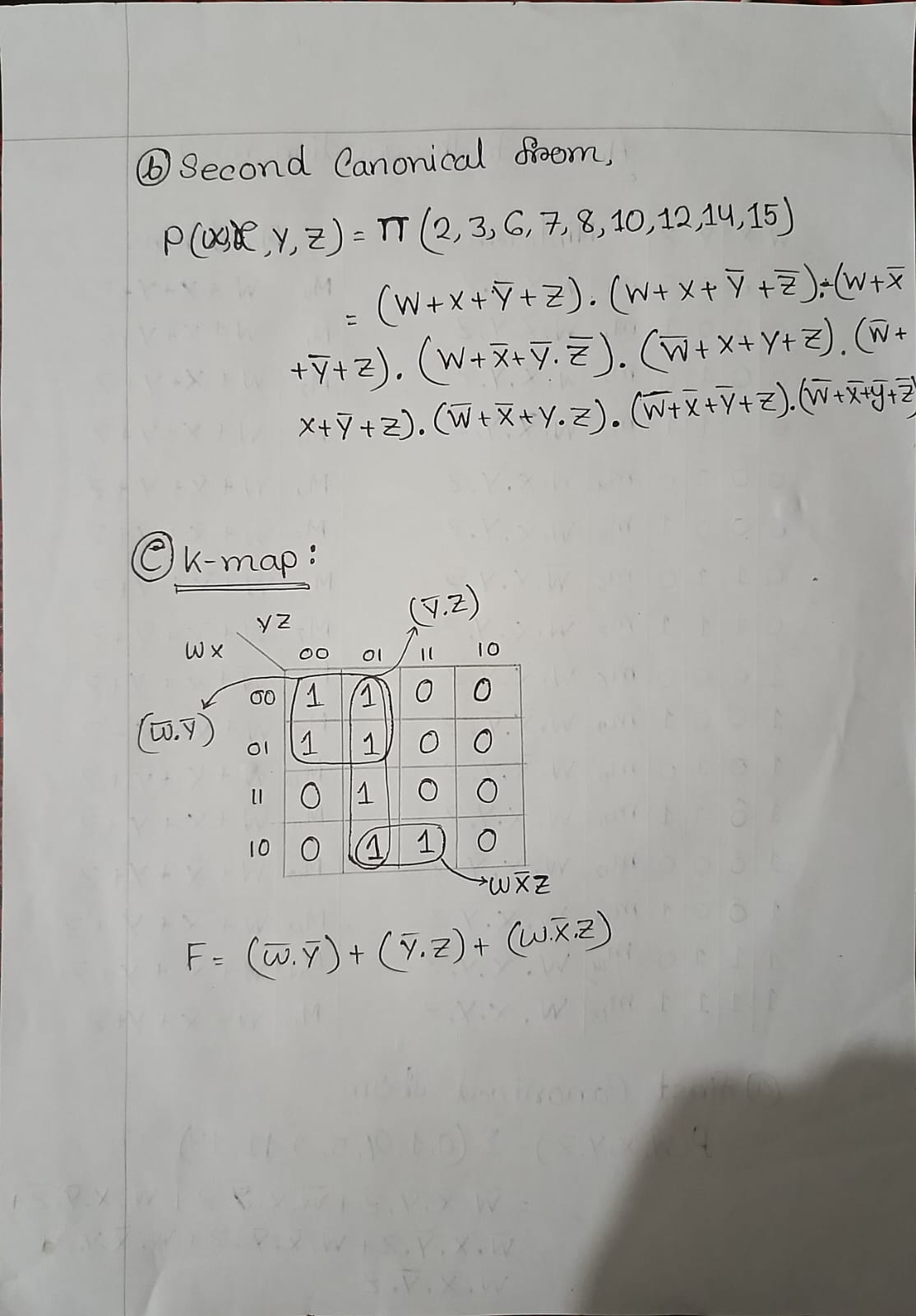
2) 𝑃(𝑊, 𝑋, 𝑌, 𝑍) = ∑(0,1,4,5,9,11,13). Derive the equation of P  
a) Using first canonical form.  
b) Using second canonical form.  
c) Using K-map. Simulate the circuit.  
d) Convert the circuit of question c to its NAND equivalent circuit.  
e) Convert the circuit of question c to its NOR equivalent circuit.  
f) From question a to e which is the most cost-effective circuit. Justify your answer.

**Answer To The Question No 2**

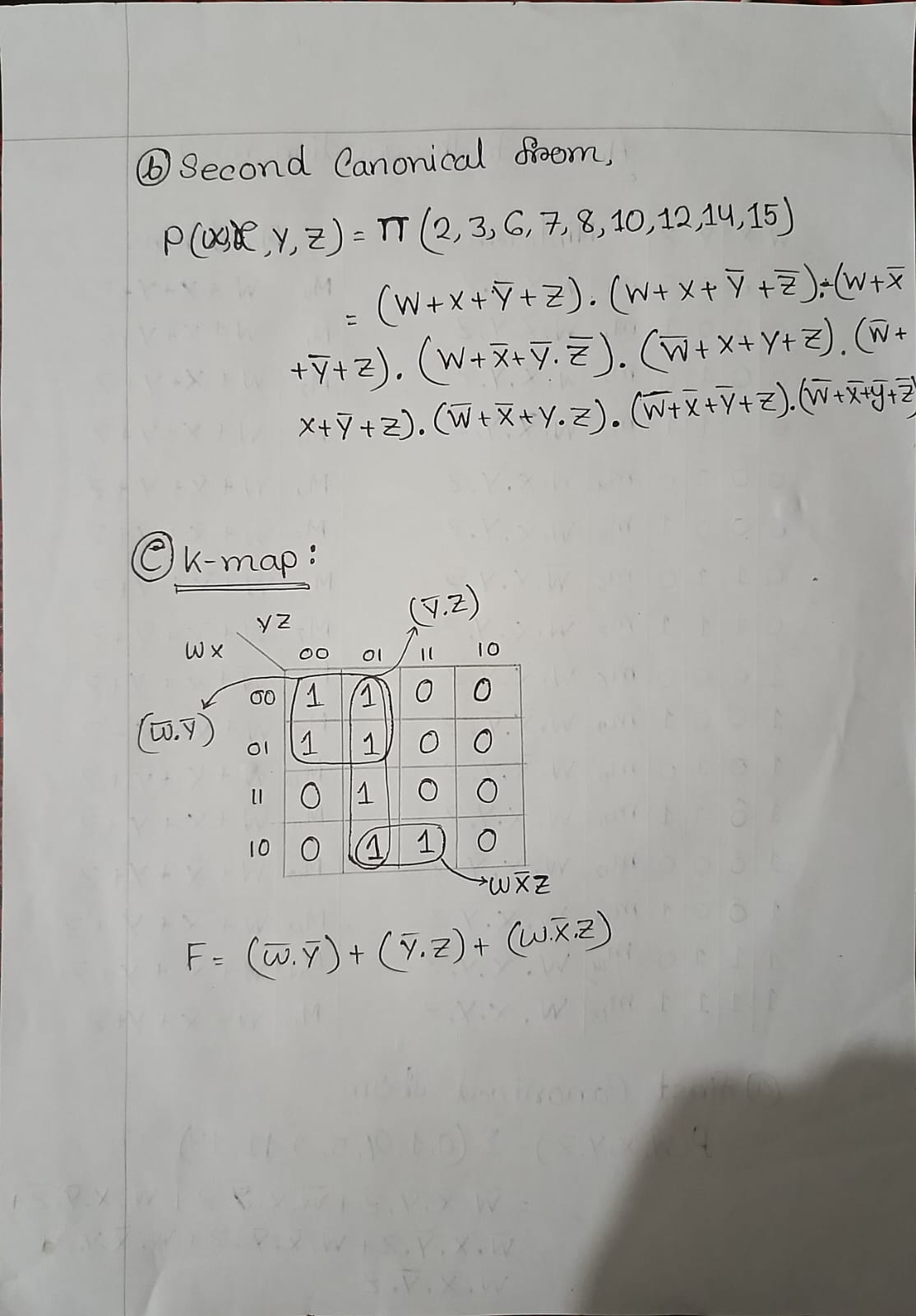
**(a)**

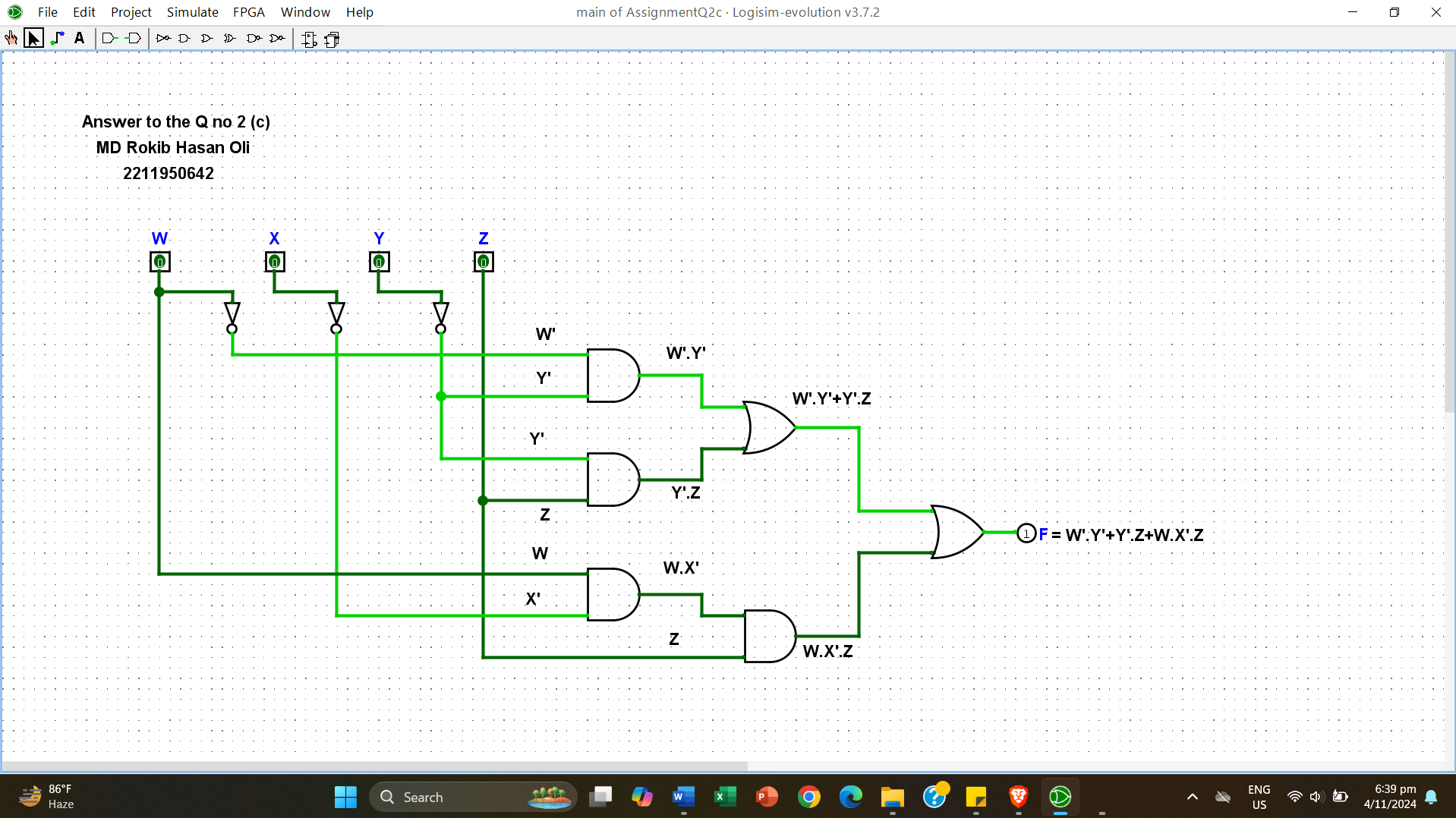


**(b)**

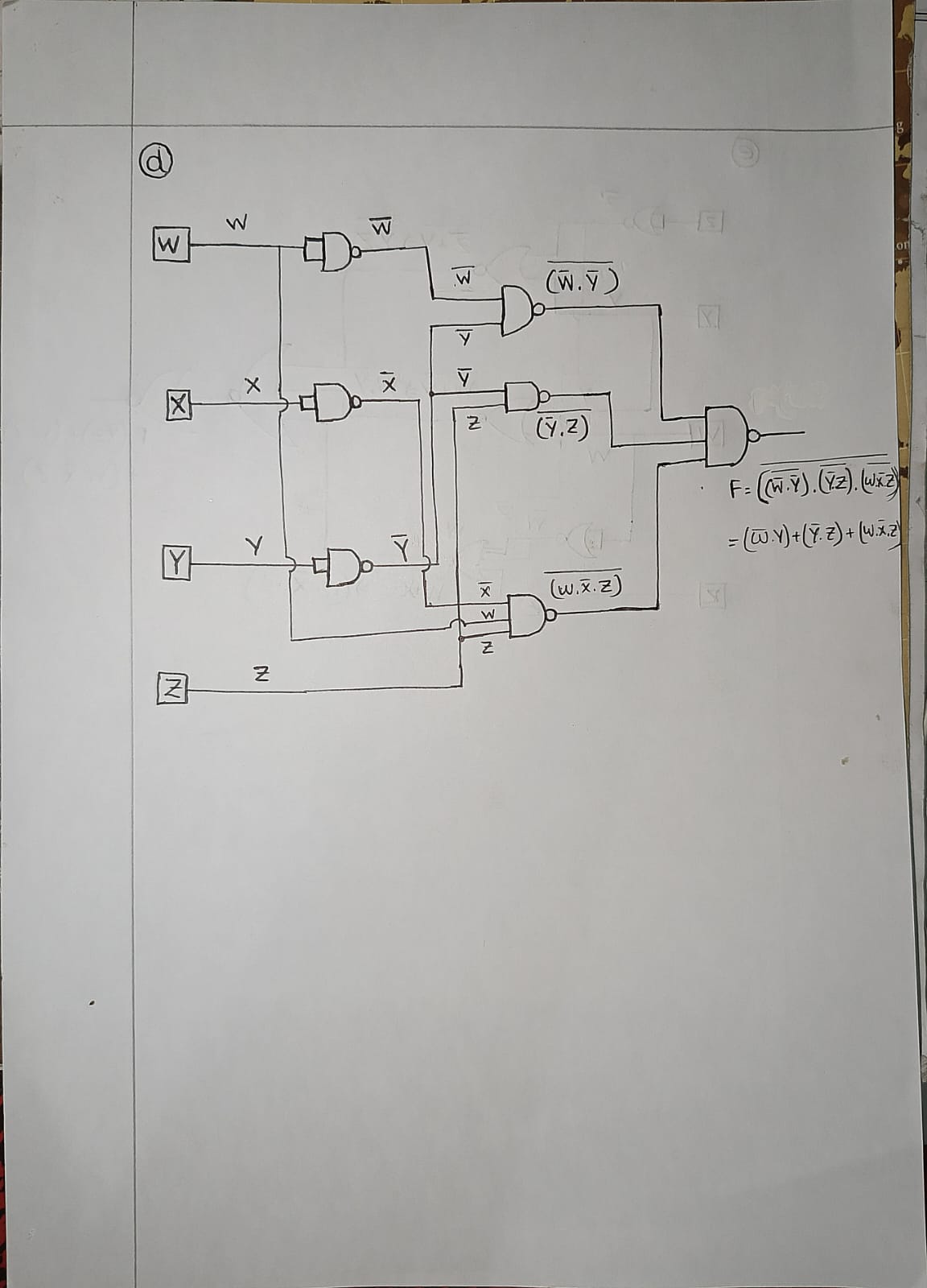


**(c)**

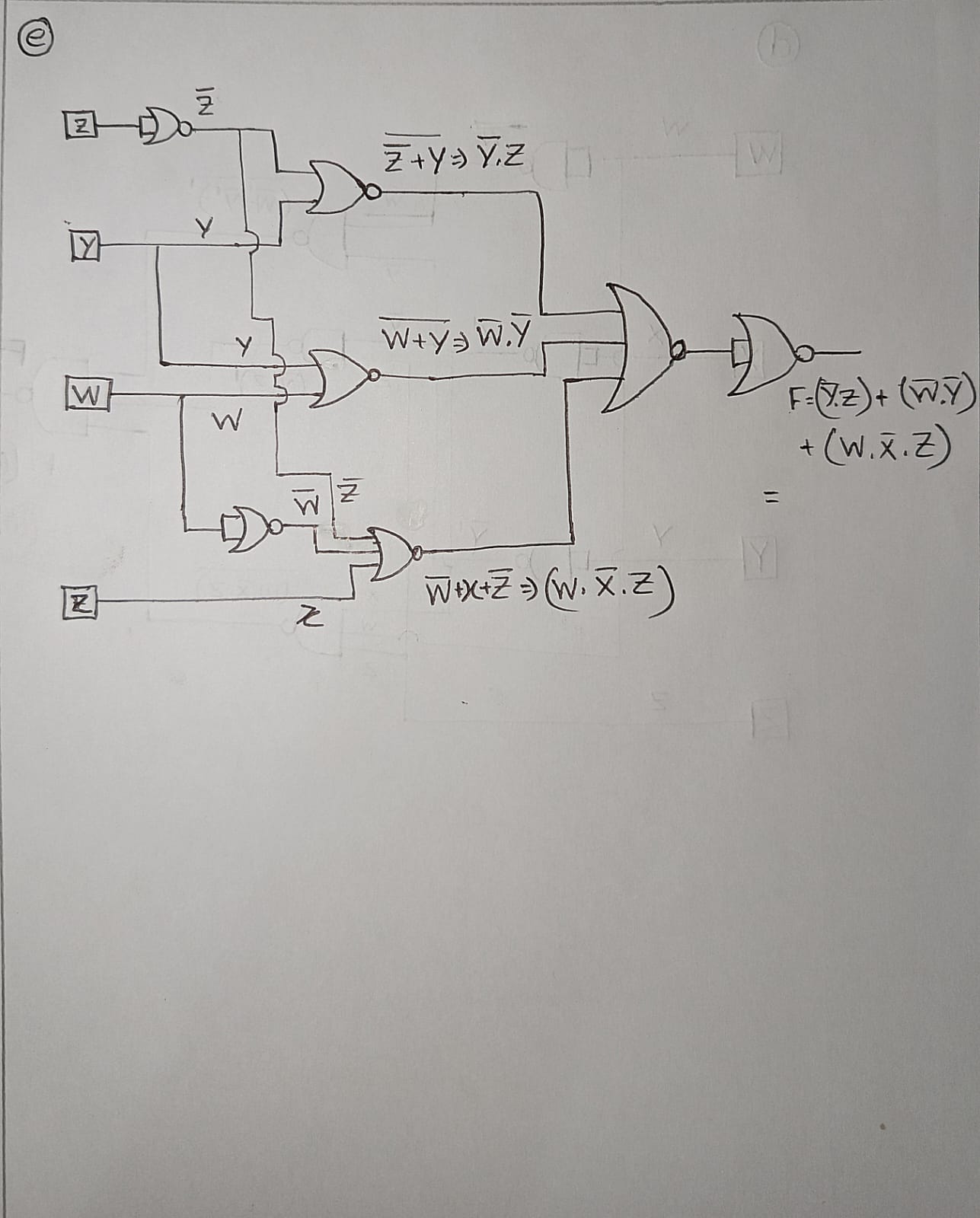


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**(d)**



**(e)**



**(f)**

