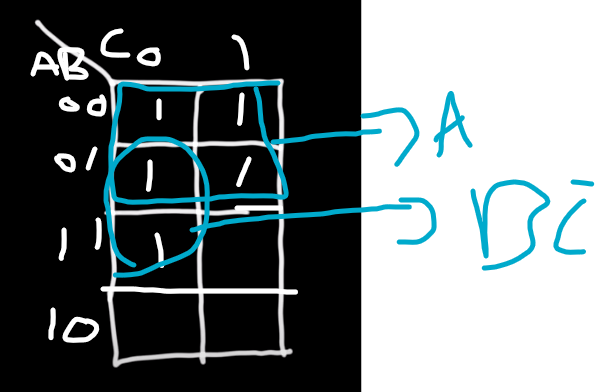
Q1

a. X= ABC' +A'B +A’B’



X=A+BC’

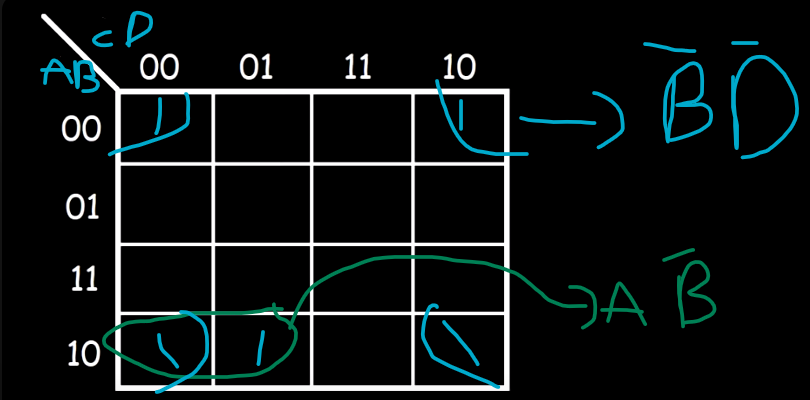
b. 𝑌 = 𝐵𝐶 + 𝐴’B’C + 𝐵𝐶’

A drawing of a grid with arrows and letters

Description automatically generated with medium confidence

Y=A’C + B

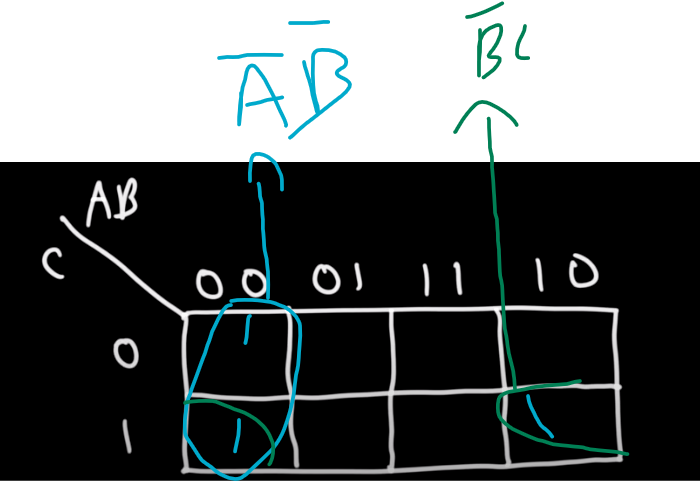
c. 𝑊 = 𝐵’(𝐶𝐷’ + 𝐴’𝐷) + 𝐵’C’(𝐴 + 𝐴’𝐷’)



𝑊 = AB’ +B’D’

Q2

a) A’B’C’ + A’B’C + AB’C



X=A’B’ +B’C

b) 𝐴𝐶 (𝐵’ + 𝐶)

x= ABC’+ AC

A drawing of a graph

Description automatically generated

X= AB+AC

Q3

a. 𝐴 + 𝐵C

X = ABC +A’BC+AB’C+ABC’+AB’C’

A drawing of a graph

Description automatically generated

X=A+BC

b. AB’CD + 𝐴𝐶𝐷’ + 𝐵𝐶𝐷 + 𝐴𝐵𝐶𝐷’

X= AB’CD+ABCD’+AB’CD’ + ABCD +A’BCD

A close-up of a grid

Description automatically generated

X=AC+BCD

Q4

(a) (𝑋 + 𝑌')(𝑋'+ 𝑍)(𝑋 + 𝑌'+ 𝑍)(𝑋'+ 𝑌'+ 𝑍)

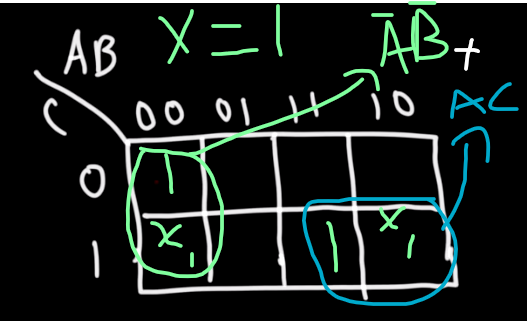
A drawing of a game

Description automatically generated with medium confidence

(X+Y’)(Y’+Z)

Q5

a) F1 =

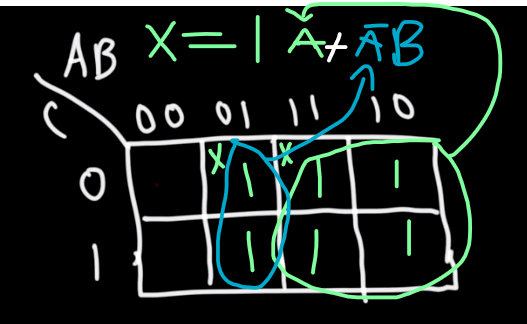


b) F2=

A blackboard with white chalk drawn on it

Description automatically generated

c) F3 =



d)F4=

A blackboard with white chalk drawn on it

Description automatically generated

Q6

a) Why is A′B′ not essential?

because it's covered by more than one prime implicant

b) Why is BD′ essential?

because it's covered only by one prime implicant

c) Is A′D′ essential? Why?

Non essential, because it's covered by more than one prime implicant

d) Is BC′ essential? Why?

essential, because it's covered only by one prime implicant

e) Is B′CD essential? Why?

essential, because it's covered only by one prime implicant

f) Find the minimum sum of products

Z=A’C’+BC’+B’CD+A’D’+BD’

Q7

A black background with colorful lines and numbers

Description automatically generated



Z= A’B’C+CD+BC’+AC’

Q8

A screenshot of a game

Description automatically generated

Z=(A+B+C)(A’+C’+D)(B’+C’+D)