Assignment 1 : 7-segment display.

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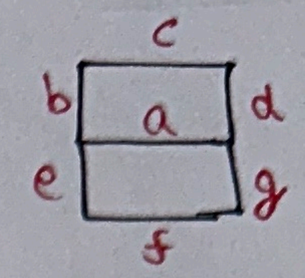
A.) Steps for logic minimisation for segment c :



	A B C D	C
0	0 0 0 0	1
1	0 0 0 1	0
2	0 0 1 0	1
3	0 0 1 1	1
4	0 1 0 0	0
5	0 1 0 1	1
6	0 1 1 0	1
7	0 1 1 1	1
8	1 0 0 0	1
9	1 0 0 1	1
10	1 0 1 0	–
11	1 0 1 1	–
12	1 1 0 0	–
13	1 1 0 1	–
14	1 1 1 0	–
15	1 1 1 1	–

Don't cares. Can be 0 or 1.

Steps for miminisation :-

1.] To find all prime implicants. (that cannot grow further without covering 0's). = 4

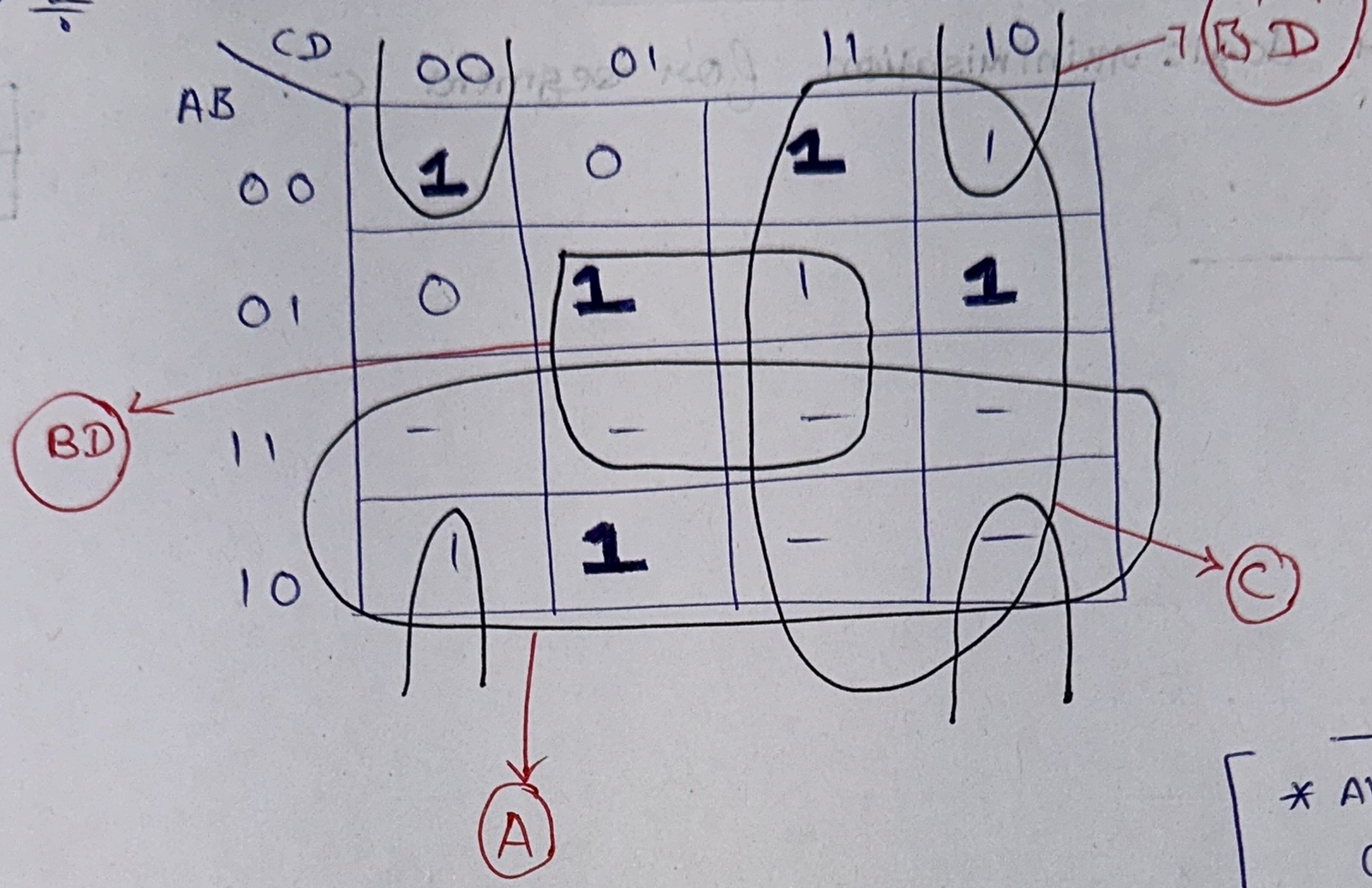
2.] To find all distinguished 1's (1 that is covered by only one prime implicant) = 5

3.] Essential Prime implicants (those prime implicant which converts at least one distinguished - 1) . = 4

Then will see if all 1's are covered in essential implicant or any non-

essential implicant has to be added.

K-map ÷



* All bold 1's are distinguished 1. and circled literals are essential literals

÷ To cover all 1's we need atleast 4 primes.

8 1's then one literal

4 1's then 2 literals

2 1's then 3 literals

4.) The minimal cover for segment 'c' =>

$$f(c) = A + C + BD + B'D'$$