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2012518642

Task-1

C.2. Procedure

Input Reference	$A\ B\ C$	F	Min term	Max term
0	0 0 0	0		
1	0 0 1	1		
2	0 1 0	1		
3	0 1 1	0		
4	1 0 0	0		
5	1 0 1	0		
6	1 1 0	1		
7	1 1 1	0		

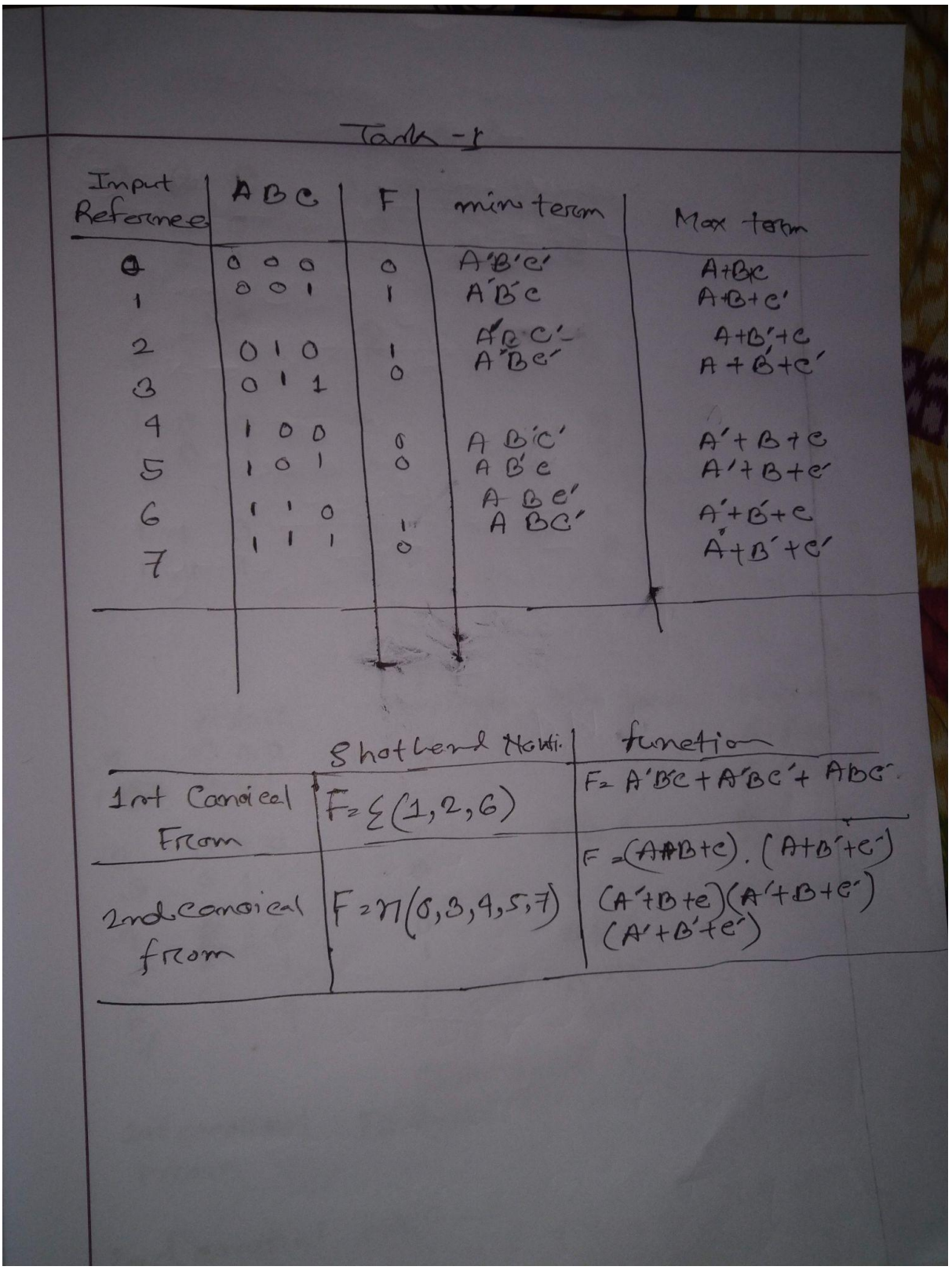
Table C.1 Truth table to a combinational circuit

1. Write down all the min terms and max terms of three inputs ABC in Table C.1.
2. Write down the function F in 1st and 2nd Canonical Forms in Table C.2.

	Shorthand Notation	Function
1st Canonical Form	$F = \Sigma$	$F =$
2nd Canonical Form	$F = \Pi$	$F =$

Table C.2 1st and 2nd canonical forms of the combinational circuit of Table C.1

Table:

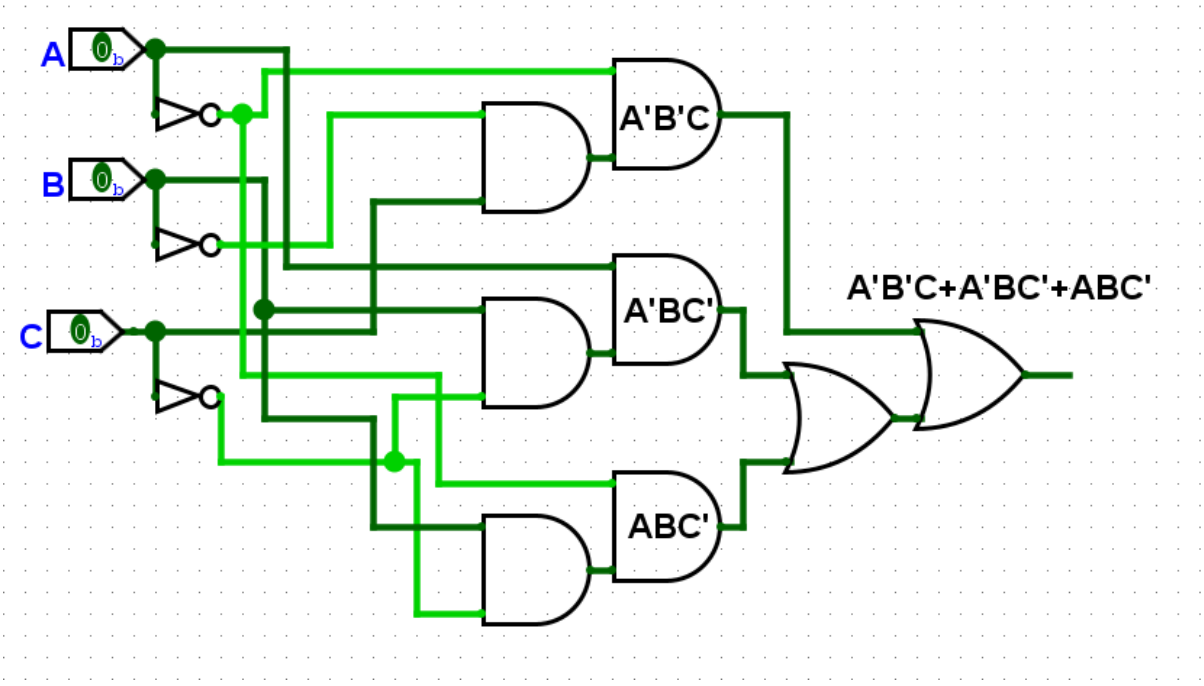


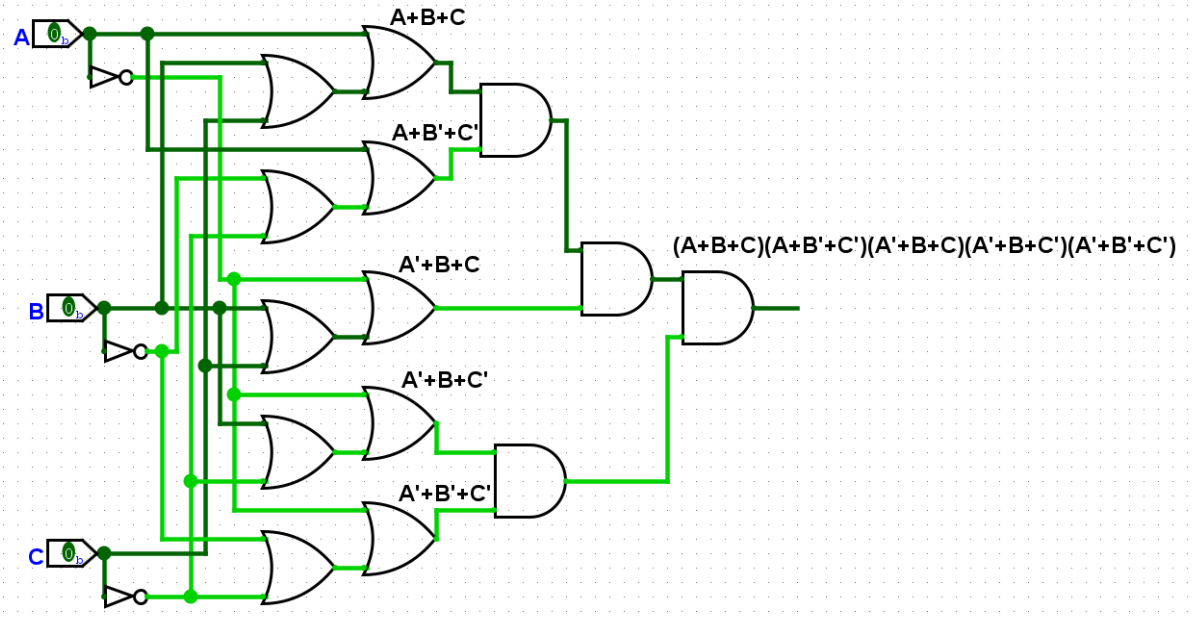
Task - 1

Input Reference	A B C	F	min term	Max term
0	0 0 0	0	A'B'C'	A+BC
1	0 0 1	1	A'B'C	A+B+C'
2	0 1 0	1	A'BC'	A+B'+C
3	0 1 1	0	A'BC'	A+B'+C'
4	1 0 0	0	A B'C'	A'+B+C
5	1 0 1	0	A B'C	A'+B+C'
6	1 1 0	1	A BC'	A'+B'+C
7	1 1 1	0		A'+B'+C'

	Shorthand Notation	function
1st Canonical From	F = Σ(1,2,6)	F = A'B'C + A'BC' + ABC'
2nd canonical from	F = Π(0,3,4,5,7)	F = (A+B+C).(A+B'+C') (A'+B+C)(A'+B+C') (A'+B'+C')

Logisim:


A
B
C
A'B'C
A'BC'
ABC'
A'B'C+A'BC'+ABC'


A
B
C
A+B+C
A+B'+C'
A'+B+C
A'+B+C'
A'+B'+C'
(A+B+C)(A+B'+C')(A'+B+C)(A'+B+C')(A'+B'+C')

Task-2

D.2. Procedure

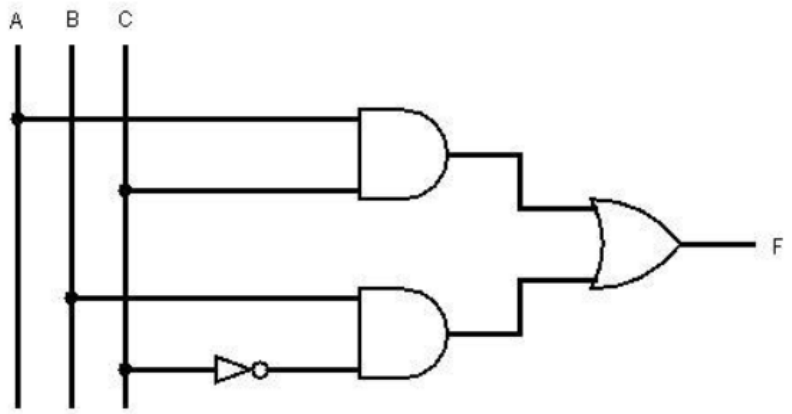


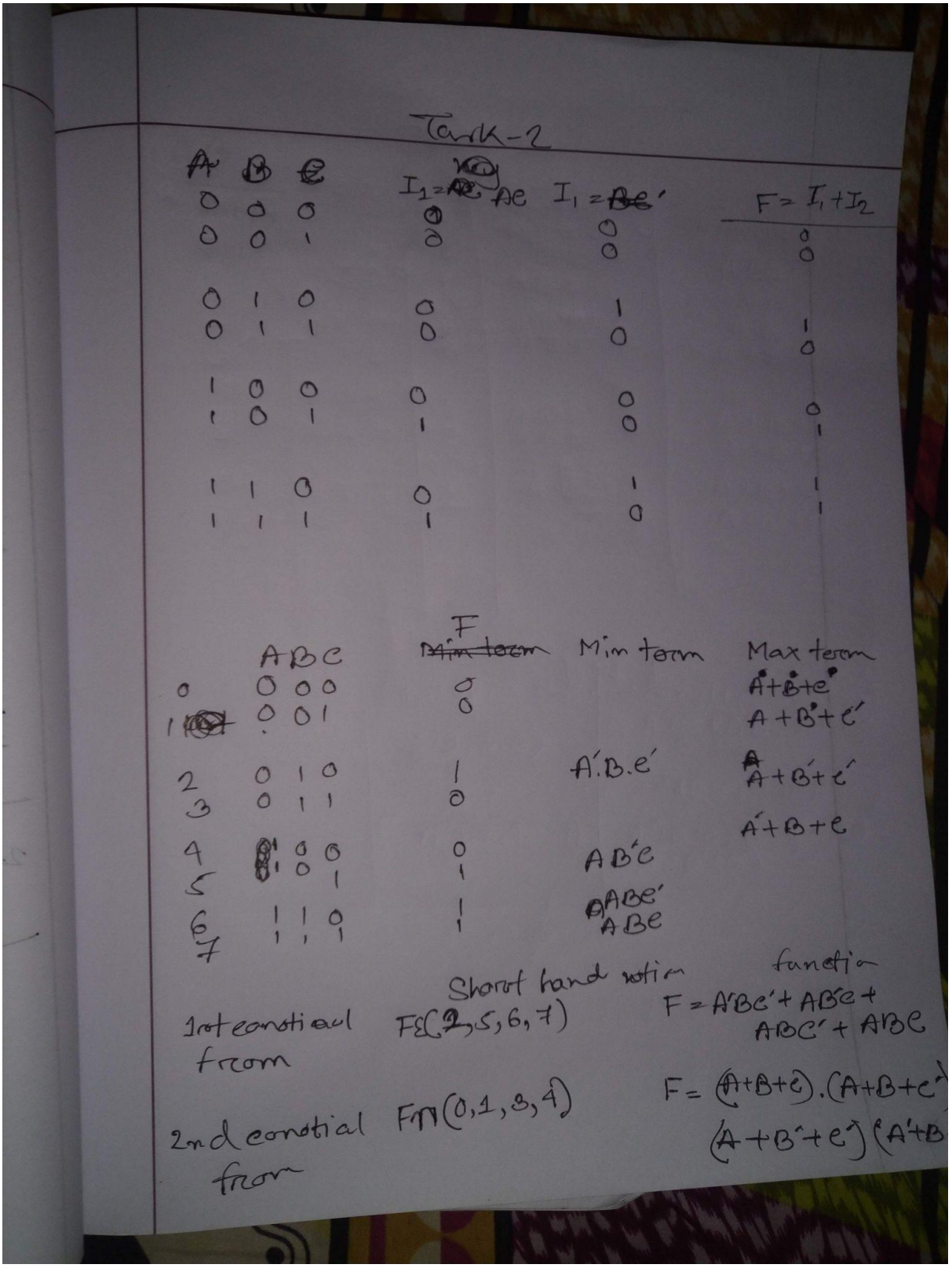
Figure 0.1 A combinational circuit

1. Complete the truth table for the circuit of Figure 0.1 in Table 0.1.

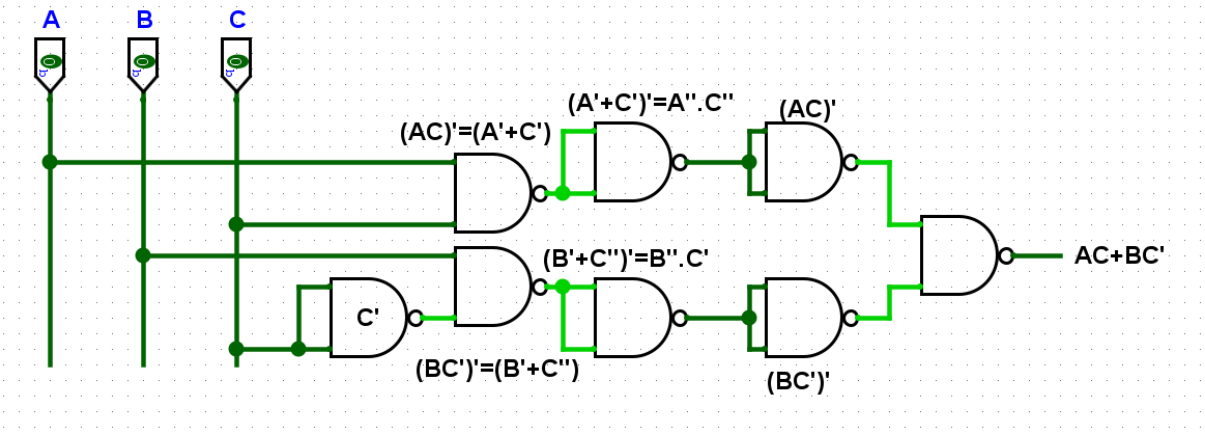
XYZ	$I_1 = AC$	$I_1 = BC'$	F
0 0 0			
0 0 1			
0 1 0			
0 1 1			
1 0 0			
1 0 1			
1 1 0			
1 1 1			

Table 0.1 Truth table of the combination circuit of Figure 0.1

Table:


Task-2
A B C
$I_1 = AC$
$I_2 = BC'$
$F = I_1 + I_2$
ABC
F
Min term
Max term
$A'B'C'$
$A'BC'$
ABC'
ABC
$A+B+C$
$A+B+C'$
$A+B'+C'$
$A'+B+C$
Short hand notion
Tabular form
$F \Sigma(2,5,6,7)$
$F = A'BC' + ABC' + ABC$
$F \Pi(0,1,3,4)$
$F = (A+B+C).(A+B+C')$
$(A+B'+C')(A'+B$

Logisim:


A
B
C
(AC)'=(A'+C')
(A'+C')'=A''.C''
(AC)'
(B'+C'')'=B''.C'
C'
(BC')'=(B'+C'')
(BC')'
AC+BC'