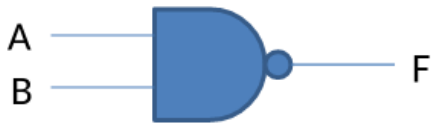
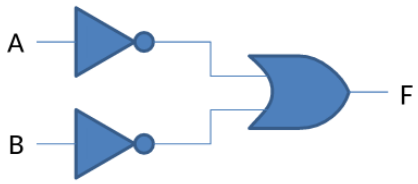
Oppg 1

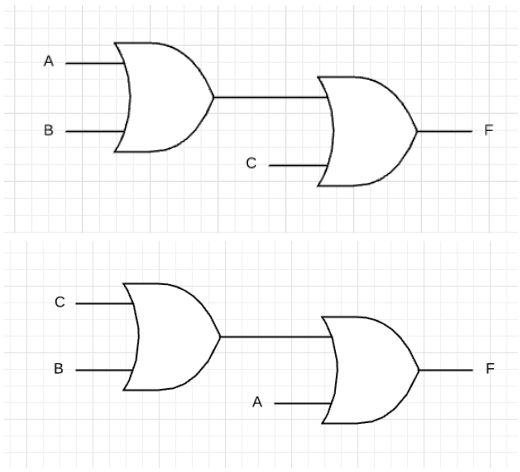
Forklaring:

Uttrykk	Binære Tallsystem
34 + 32	010010 34 + 010000 32 = 100010 66
34 - 32	10010 34 + 10000 32 (toerkomplement) = 00010 2 (overflow går bort)
34 + -32	Samme som over (34 - 32)
34 - -32	010010 34 + 010000 32 (toerkomplement av toerkomplement = 100010 64 blir det samme tallet) altså samme som 34 + 32.

Flyttall:

Oppg 2

Delop pg	Digital krets	Boolsk uttrykk	Sannhetstabell
a)		¬ (A ^ B) = F ¬A v ¬B = F	A B F 0 0 1 1 0 1 0 1 1 1 1 0
b)		¬A v ¬B = F ¬(A ^ B) = F	A B F 0 0 1 1 0 1 0 1 1 1 1 0

<table>
<tr>
<td>c) & d)</td>
<td> 
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<td>A + B + C = F
(A + B) + C = F
A + (B + C) = F</td>
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<tr><th>A</th><th>B</th><th>C</th><th>F</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td></tr>
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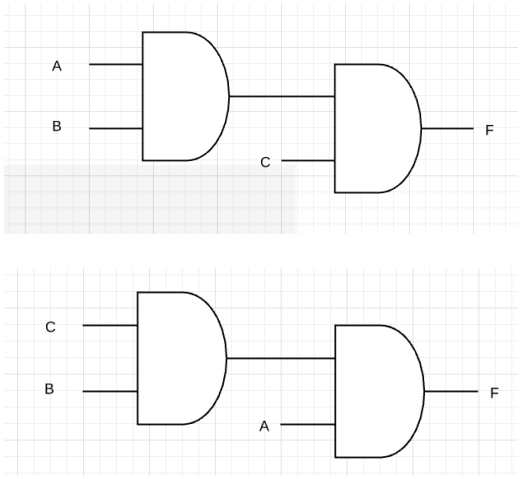
<tr>
<td>e) & f)</td>
<td> 
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<td>A * B * C = F
(A * B) * C = F
A * (B * C) = F</td>
<td>
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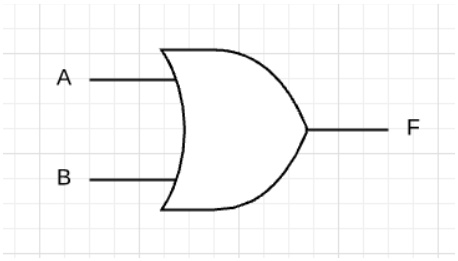
<td>g)</td>
<td> 
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<td>A + B = F</td>
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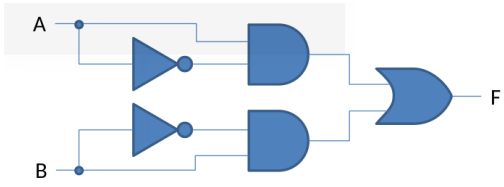
<td> 
</td>
<td>(A ^ ¬A) v (B ^ ¬B) = F</td>
<td>
<table>
<tr><th>A</th><th>B</th><th>F</th></tr>
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</tr>
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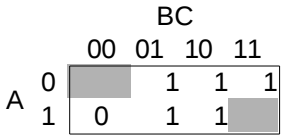
i) ja den blir alltid False

Oppg 3

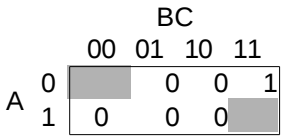
a)

C	B	A	a	b	c	d	e	f	g	sum
0	0	1	0	0	0	0	0	0	1	1
0	1	0	1	0	0	0	0	1	0	2
0	1	1	1	0	0	0	0	1	1	3
1	0	0	1	0	1	1	0	1	0	4
1	0	1	1	0	1	1	0	1	1	5
1	1	0	1	1	1	1	1	1	0	6

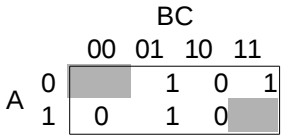
b) Diode a →



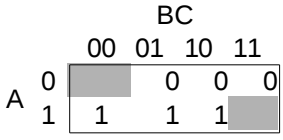
Diode b →



Diode c →



Diode g →



c)

Diode a → Denne lyser for alle tilfeller utenom et altså ikke når 001. Dermed blir boolsk uttrykk negativen av det enkle tilfellet:

(C v B) v ¬A

Diode b → Denne lyser kun når 110 blir sendt altså når terningen blir 6.

(C ^ B) ^ ¬A

Diode c → Denne lyser I tilfellene 101, 100 og 110. altså når terningen er 4, 5 eller 6.

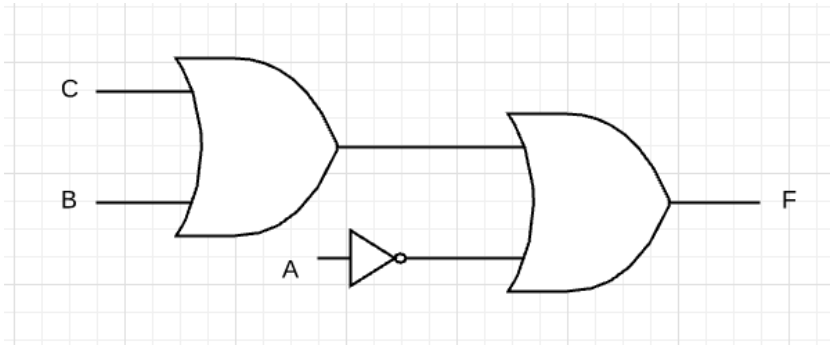
C ^ ¬(B ^ A)

Diode g → Denne lyser I tilfellene 101 og 011 og 001. altså når terningen er 1, 3 eller 5.

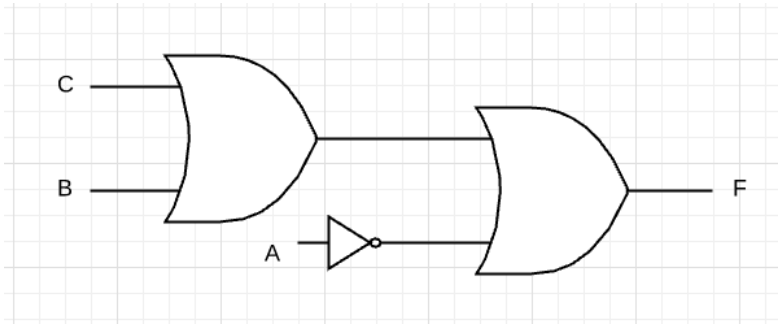
¬(C ^ B) ^ A

d)

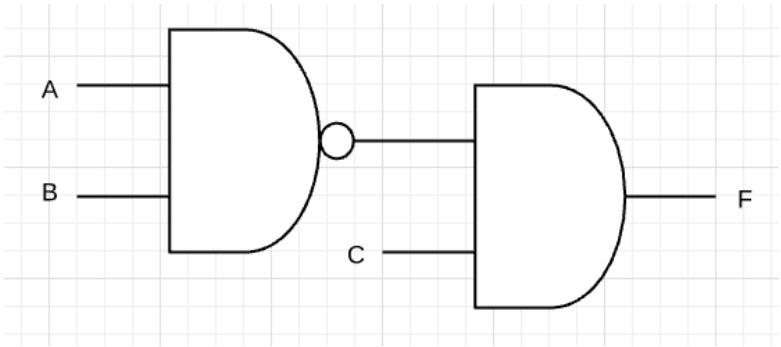
Diode a:



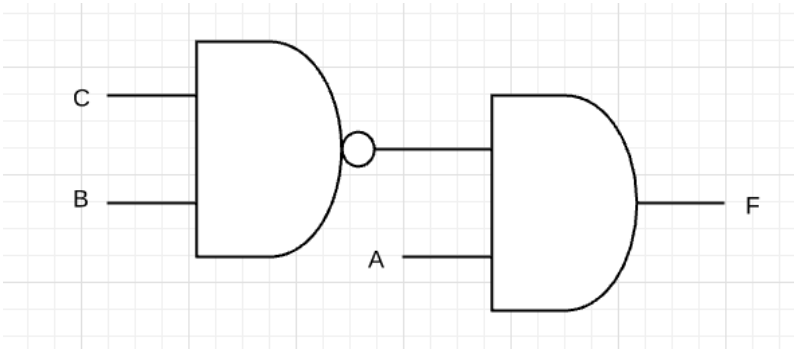
Diode b:



Diode c:



Diode g:



Oppg 4