

Since $X+X=X$, we can write (by adding repeated terms)

$$T = (\bar{A}.B.C + A.B.C) + (A.\bar{B}.C + A.B.C) + (A.B.\bar{C} + A.B.C)$$

Then take common factors from grouped terms

$$T = (\bar{A}+A).B.C + (\bar{B}+B).A.C + (\bar{C}+C).A.B$$

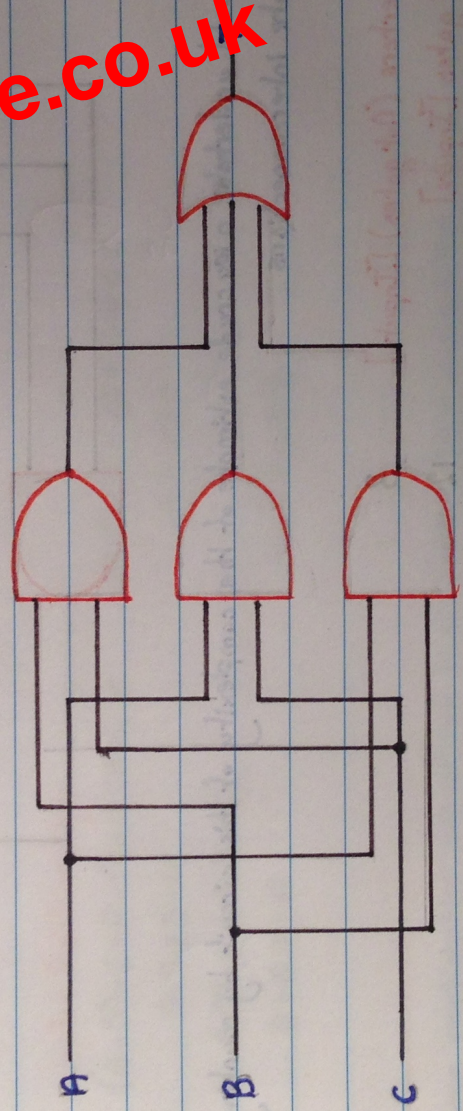
Since $(X+\bar{X})=1$ and $1.X=X$

Using two steps of simplification:

Step 1: $T = 1.B.C + 1.A.C + 1.A.B$

Step 2: $T = B.C + A.C + A.B$

Preview from Notesale.co.uk
Page 3 of 5



Inverters (NOT gates) [Inputs]	0
AND gates [Inputs]	6
OR gates [Inputs]	3
Total	9

This represents 47% of the previously obtained circuit complexity. Normally, we optimise circuit speed rather than circuit complexity. This is achieved by reducing the number of cascaded gates (gates in series), as every gate that a signal has to pass through slows down the overall speed of the system.