**Question 3. (12 points)**

* 1. Express the Boolean function Y of the following given circuit as a Boolean expression without simplification: **(3 points)**



* 1. Given the Boolean function $F\left(X,Y,Z\right)=\left(X+Y\right)\left(\overbar{X}+Z\right)(\overbar{Y}+\overbar{Z})$: **(6 points)**
1. Express F as a **product-of-maxterms**, $F=\prod\_{}^{}M$.
2. Find the ***algebraic* sum-of-minterms** expression for *F*.
	1. Given that $F(A,B,C)=\sum\_{}^{}m\left(0,2,5,6\right)$ and $ G\left(A,B,C\right)=\prod\_{}^{}M\left(1,2,5,7\right), $ express the function $F.\overbar{G}$ as a **sum-of-minterms**. **(3 points)**