→ Combinatorial Circuits :-

- Output = P, Input = x, y, z

and $P = (x \text{ and } y)$ or z'

P is true when $\langle xyz \rangle$ = 000, 010, 100, 110, 111

This is a combinatorial circuit. But in COA, we use sequential circuit

- Now suppose, $p = (x + z') \cdot (y + z)$

Let $x = 0$; $\Rightarrow P = z' \cdot (y + z) = z' \cdot y$

$\therefore \boxed{\langle xyz \rangle = 010}$

Let $x = 1 \Rightarrow P = (y + z)$

Let $y = 0 \Rightarrow z = 1$ $\therefore \boxed{\langle xyz \rangle = 101}$

Let $y = 1 \Rightarrow z = 0$ or 1 both are sol^n $\therefore \boxed{\langle xyz \rangle = 110, 11}$

So total sol^n $\Rightarrow \langle xyz \rangle$ = 010, 101, 110, 111

- Let $q = q \cdot z' + y \cdot z \Rightarrow$ Input $\underbrace{y, z}$; Output = q

↳ same as x term
Hence, ons only in two te

If $yz = 11 \Rightarrow q = 1$
$yz = 00 \Rightarrow \cancel{q} =$ retain (Prev value of q is same as new value).

$yz = 01 \Rightarrow q = 0$
$yz = 10 \Rightarrow$ retain.

In switching circuit all inputs are initialised with true.

$\therefore$ In $q = q \cdot z' + y \cdot z$

Step 1 $yz = 11 \Rightarrow q = 1$. Now yz is changed to 10. and q is currently 1.

~~yz = 10~~

Step 2 Now $\Rightarrow$ $(\text{new } q) = (\text{old } q) \cdot z' + y \cdot z$

with $(\text{old } q) = 1$; $yz = 10$;

$(\text{new } q) = 1$

Step 3 Now, yz is changed to 01 ; and $(\text{old } q) = 1$

$\therefore (\text{new } q) = 0$.

Step 4 Now, yz is changed to 00; $(\text{old } q) = 0$

$\therefore \text{new } q = 0$