# Logic Design CH3

## Q1

### (a)

| w | x | Y | z |
|---|---|---|---|
| 1 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

## Q2

W = 0

Y = 0

X = 1

Z = 0

# Q3

(a) A three-input AND gate = A.B.C =D

(b) A four-input AND gate = A.B.C.D = E

(c) (c) A three-input OR gate = A+B+C = D

# Q4

# Q5

# Q6

# Q7

(A)

(B)

# Q8

X = $\bar{A}$  Z = $\bar{X}$

X = 0

Z = 1

# Q9

Y = $\overline{CD}$

| C | D | Y |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |

| | | |
|---|---|---|
| 1 | 1 | 0 |

# Q10

# Q11

(a)

(b)

# CH4

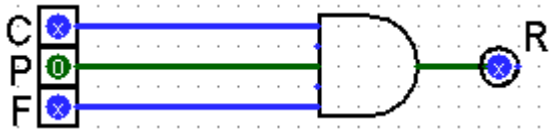
## Q1

B(A+C) = X

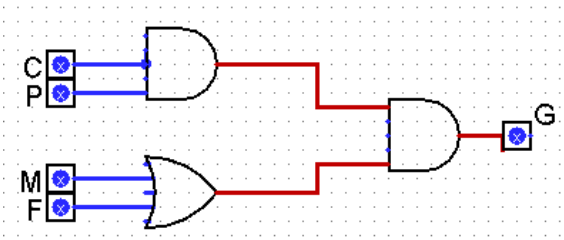
AB+B+(B+C) * D= Z

## Q2

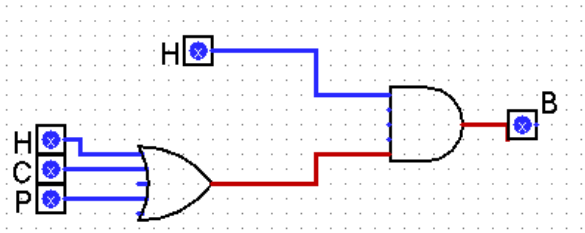
a. R=CPF




b. G=CP(M+F)

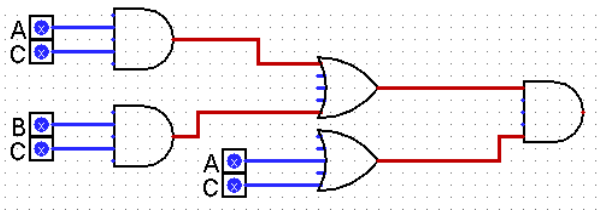



c. B = (H+C+P)F



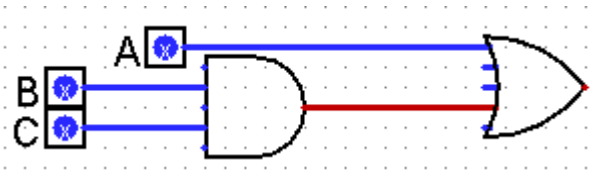
# Q3

a.




unsimplified: $P = (AC + BC)(A + C)$

simplified: P = A+BC




# Q4

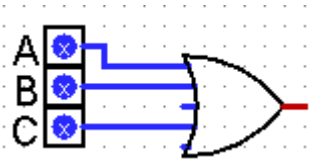
unsimplified: A((A+B).(B+C))

simplified: A((A+B).(B+C))

= A+(A+B)+(B+C)

= A+A+B+B+C

= A+B+C




# Q6

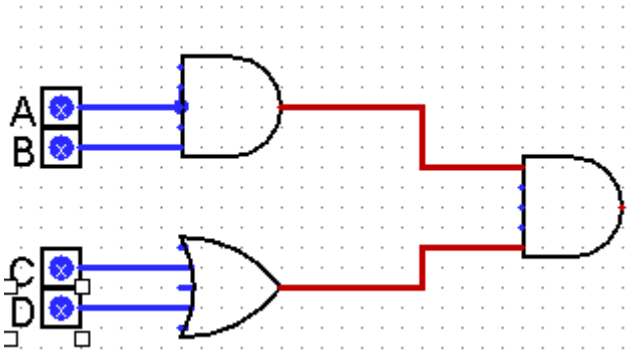
(c) = $\overline{\overline{A}\overline{B}}$ =$\bar{\bar{A}}$ + $\bar{\bar{B}}$ =A + B

(d) = A + B

c and d are equivalent

# Q9

Out = AB(C+D)




# Q10

Out = A+B+C