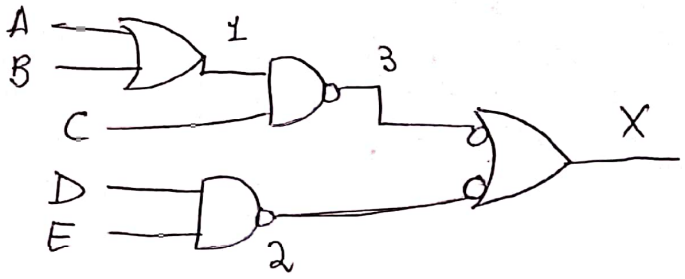
Q.1



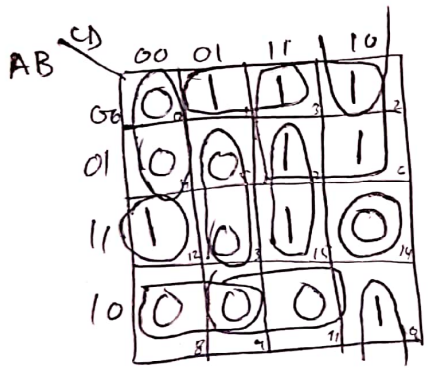

Output will be High only when

A ~~OR~~ B High and C High

OR

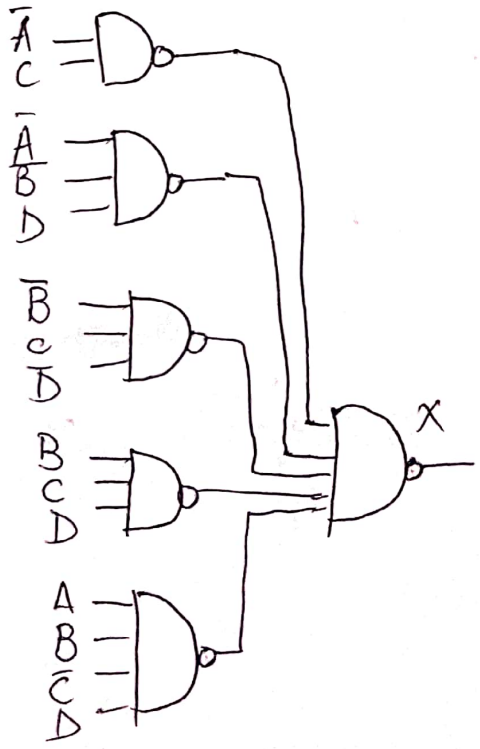
D and E both are High.

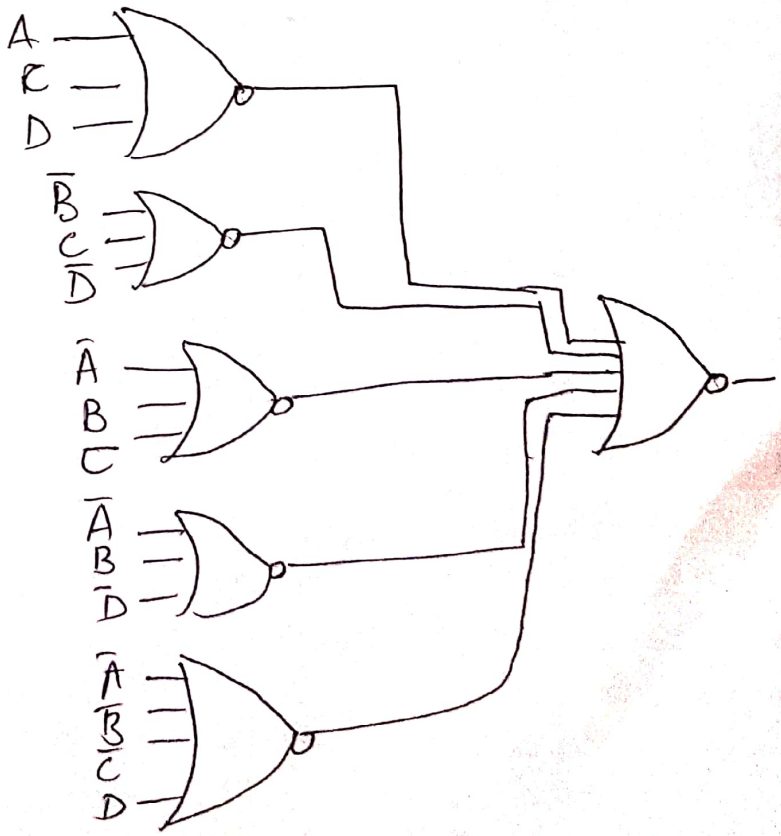
Q.2




$$X = \bar{A}C + \bar{A}\bar{B}D + \bar{B}C\bar{D} + BCD + AB\bar{C}\bar{D}$$

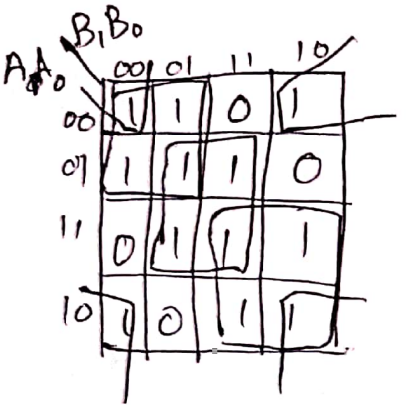
$$X = (A+C+D)(\bar{B}+C+\bar{D})(\bar{A}+B+C)(\bar{A}+B+\bar{D})(\bar{A}+\bar{B}+\bar{C}+\bar{D})$$



Q.3

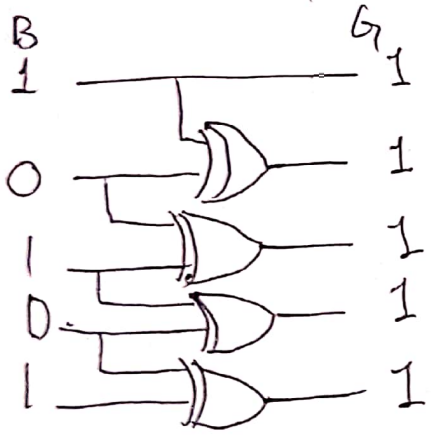
| | $A_1$ | $A_0$ | $B_1$ | $B_0$ | X |
|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 0 | 1 | 1 |
| 2 | 0 | 0 | 1 | 0 | 1 |
| 3 | 0 | 0 | 1 | 1 | 0 |
| 4 | 0 | 1 | 0 | 0 | 1 |
| 5 | 0 | 1 | 0 | 1 | 1 |
| 6 | 0 | 1 | 1 | 0 | 0 |
| 7 | 0 | 1 | 1 | 1 | 1 |
| 8 | 1 | 0 | 0 | 0 | 1 |
| 9 | 1 | 0 | 0 | 1 | 0 |
| 10 | 1 | 0 | 1 | 0 | 1 |
| 11 | 1 | 0 | 1 | 1 | 1 |
| 12 | 1 | 1 | 0 | 0 | 0 |
| 13 | 1 | 1 | 0 | 1 | 1 |
| 14 | 1 | 1 | 1 | 0 | 1 |
| 15 | 1 | 1 | 1 | 1 | 1 |




$$X = \bar{A}_1 \bar{B}_1 + A_0 B_0 + A_1 B_1 + \bar{A}_0 \bar{B}_0$$

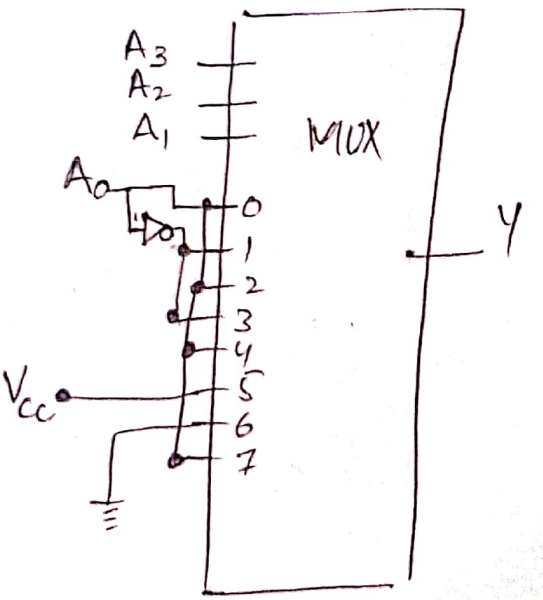
$$X = \overline{(A \oplus B_1)} + \overline{(A_0 \oplus B_0)}$$

Q.4

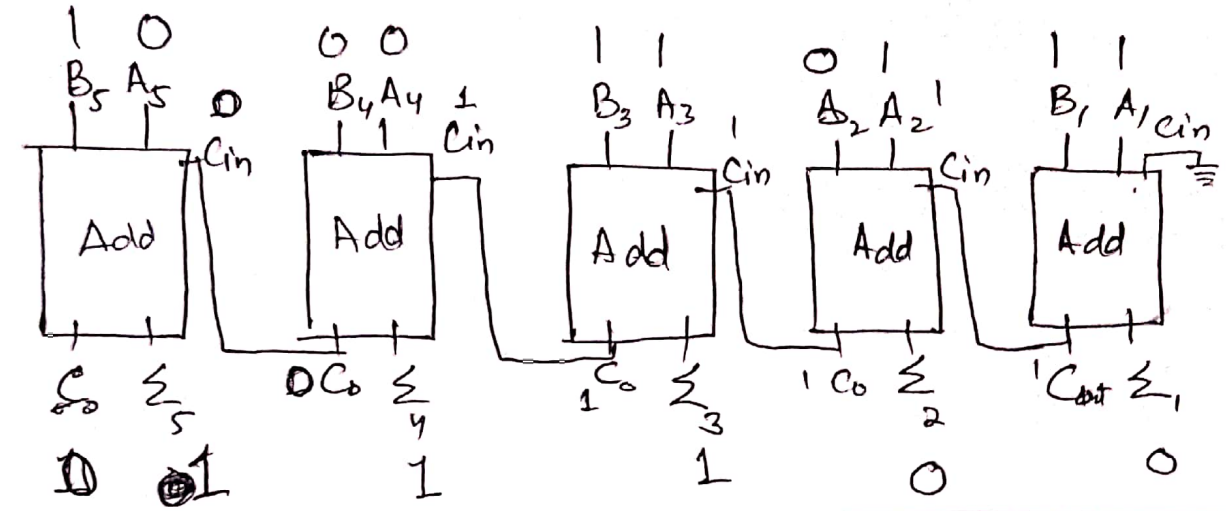



Q.5

| | $A_3$ | $A_2$ | $A_1$ | $A_0$ | Y | |
|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | $Y = A_0$ |
| 1 | 0 | 0 | 0 | 1 | 1 | $Y = \bar{A}_0$ |
| 2 | 0 | 0 | 1 | 0 | 0 | $Y = A_0$ |
| 3 | 0 | 0 | 1 | 1 | 1 | $Y = \bar{A}_0$ |
| 4 | 0 | 1 | 0 | 0 | 0 | $Y = A_0$ |
| 5 | 0 | 1 | 0 | 1 | 1 | $Y = 1$ |
| 6 | 0 | 1 | 1 | 0 | 0 | $Y = 0$ |
| 7 | 0 | 1 | 1 | 1 | 0 | $Y = A_0$ |



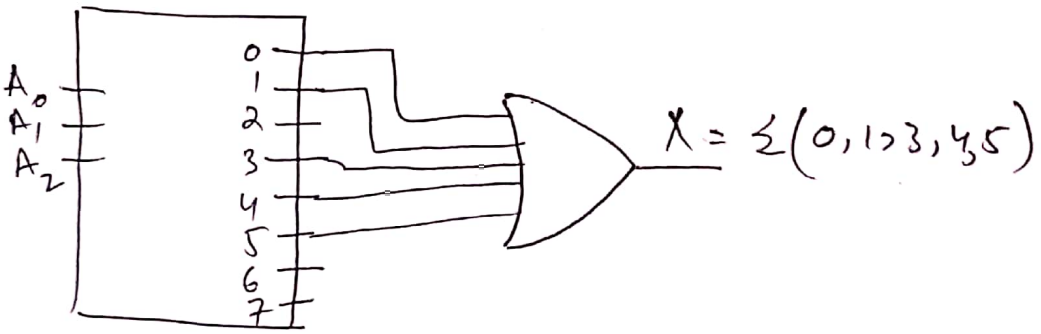
Q.6

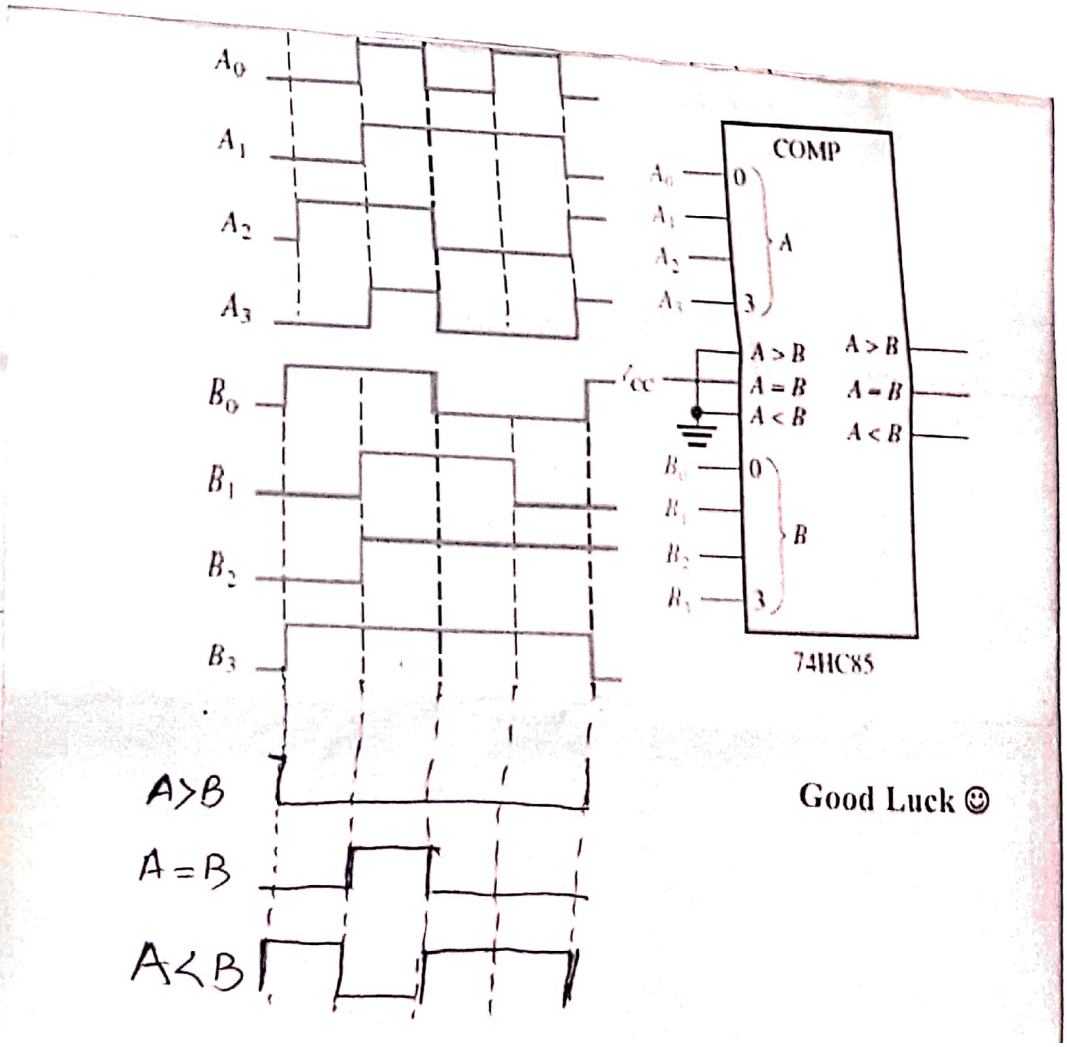



| 0 | 1 | 1 | 1 | 0 | 0 |
|---|---|---|---|---|---|

Ans

Q.7




Q.8