

Truth Table

| A | B | A-2 | A-2 < B |
|---|---|-----|---------|
| 0 | 0 | -2 | 1 |
| 0 | 1 | -2 | 1 |
| 1 | 0 | -1 | 1 |
| 1 | 1 | -1 | 1 |

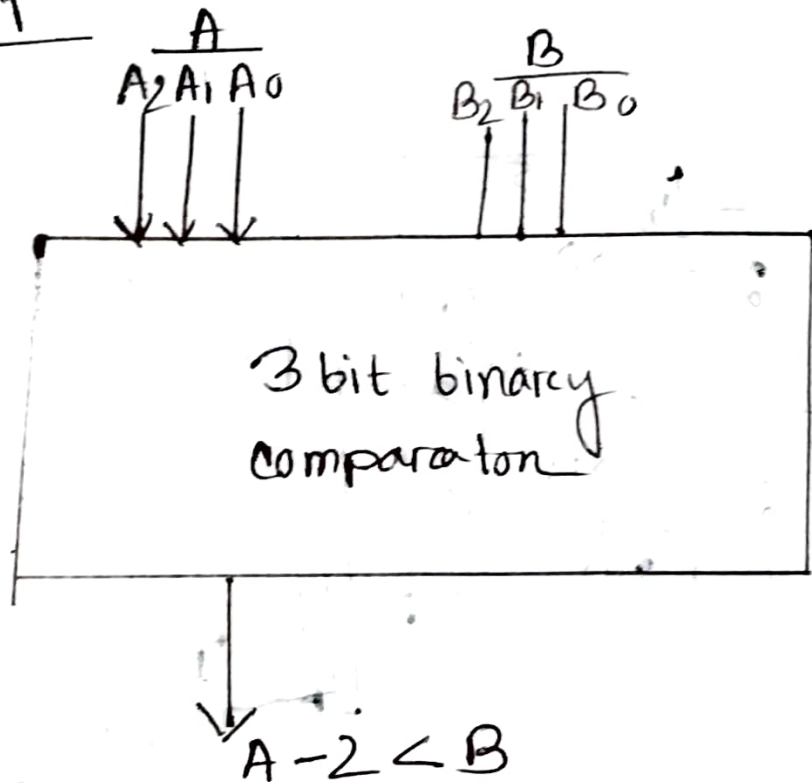
Kmap

| | B | B' | B |
|----|---|----|---|
| A' | 1 | 1 | |
| B | 1 | 1 | |

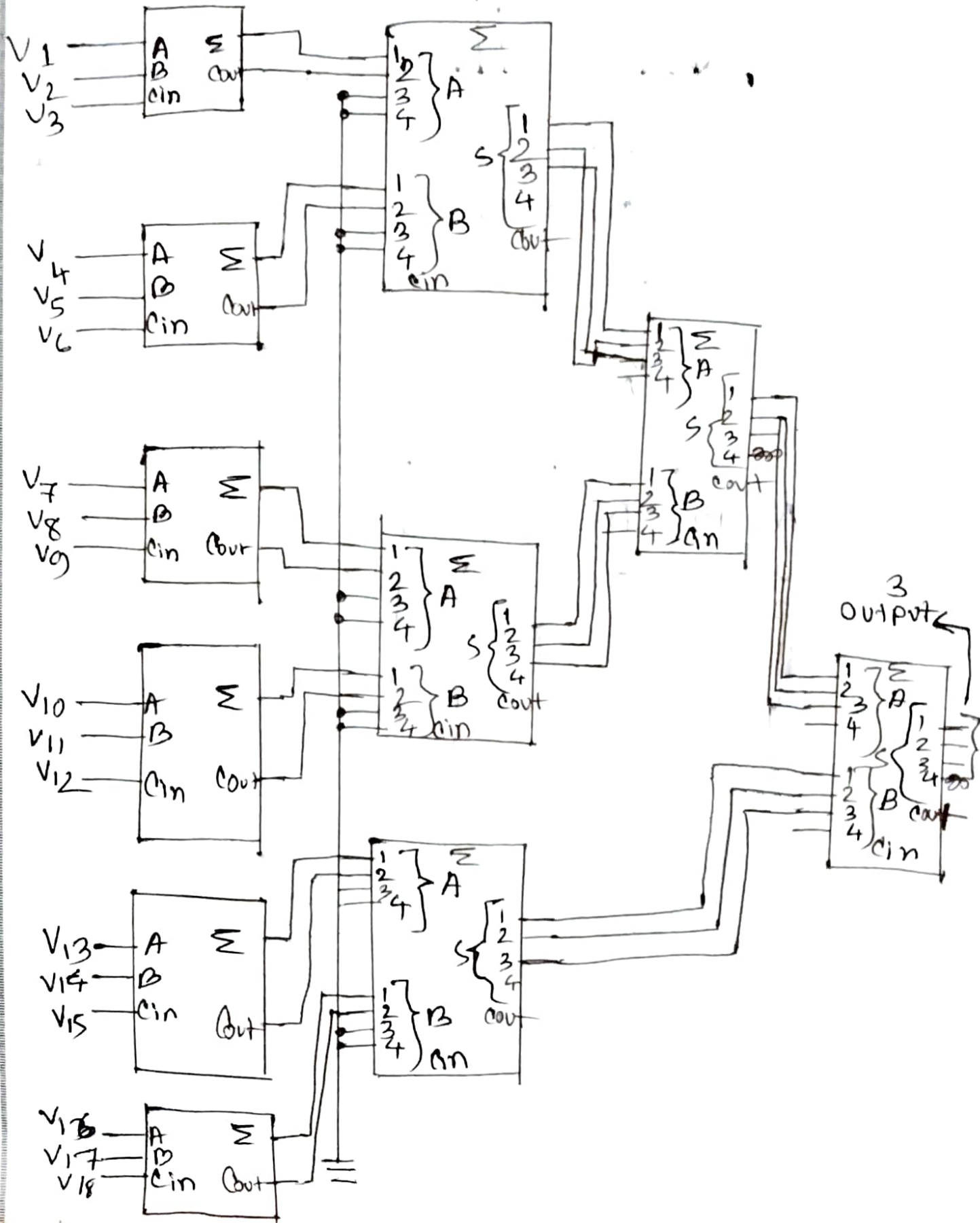
$$F(A, B) = 1$$

$$A'B + B'B$$

Circuit

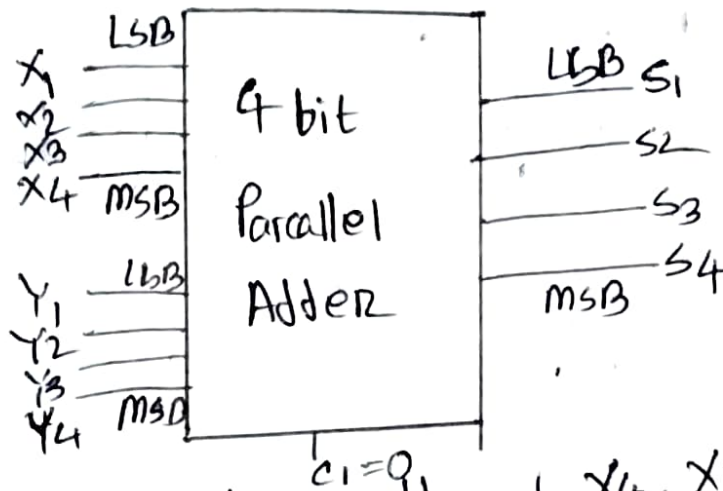


Answer to the question no: 2



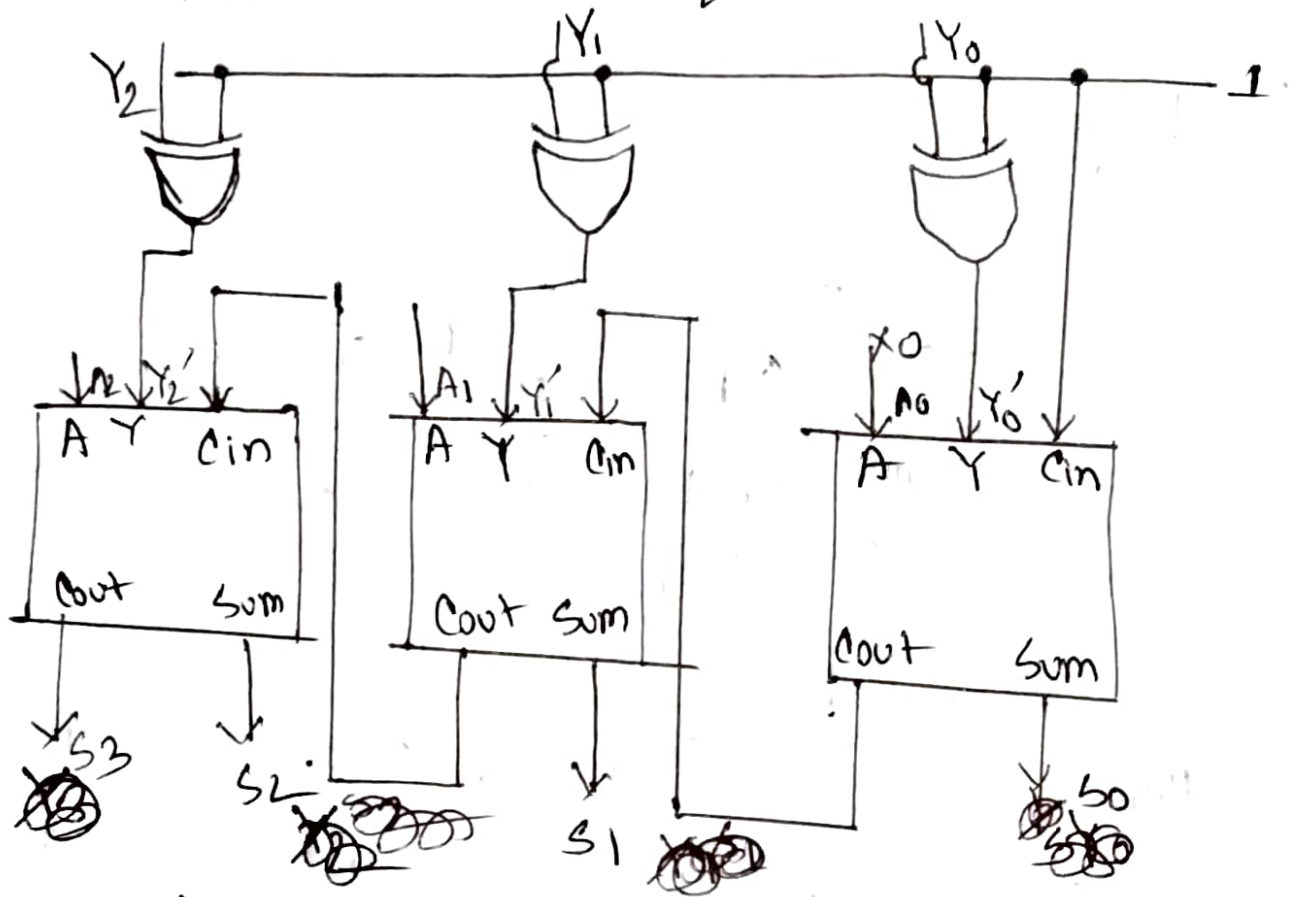
Answer to the question no: 3

Diagram



Here, this adder adds (X_4, X_3, X_2, X_1) with (Y_4, Y_3, Y_2, Y_1) & returns the sum as (S_4, S_3, S_2, S_1) .
Now for excess-5, the binary for 5 is 1010
and excess-5 means the sum of number 5.
If we give BCD input (X_4, X_3, X_2, X_1) & 1010
as (Y_4, Y_3, Y_2, Y_1) input then sum of the
BCD code will be the answer. ~~on output~~.
And the c_1 will be 0.

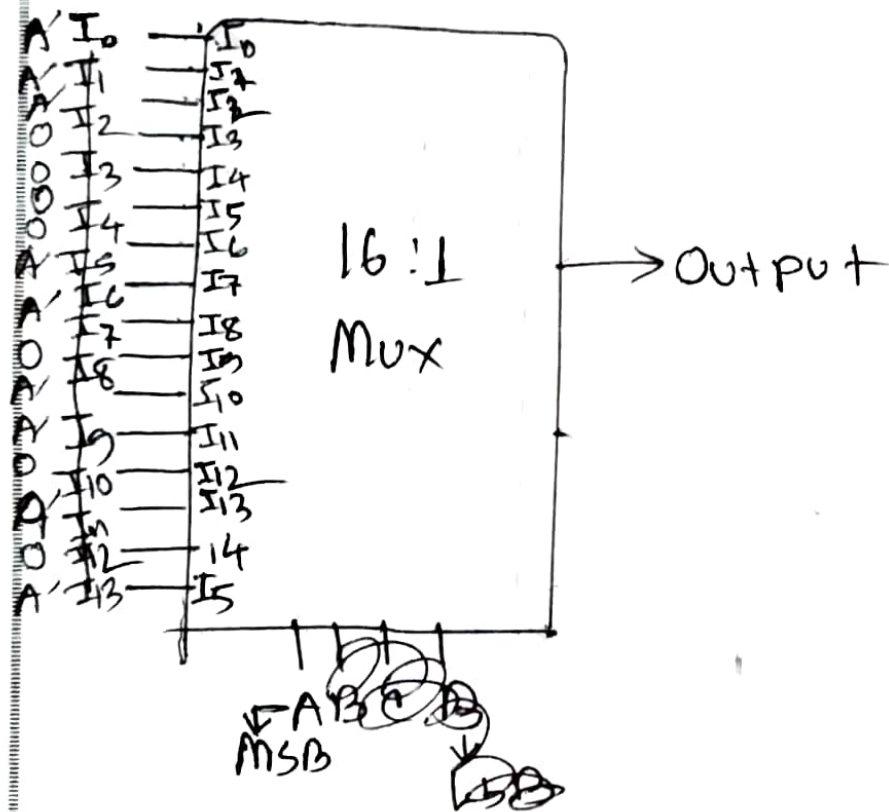
Answer to the question no: 4



Answer to the question no: 5

A 16:1 Mux $F(A, B, C, D) = \sum(0, 1, 2, 7, 8, 10, 11, 13, 15)$

| | I_0 | I_1 | I_2 | I_3 | I_4 | I_5 | I_6 | I_7 | I_8 | I_9 | I_{10} | I_{11} | I_{12} | I_{13} | I_{14} | I_{15} |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|----------|----------|----------|----------|----------|
| A' | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| A | 1 | | | | | | | | | | | | | | | |
| | A' | A' | A' | 0 | 0 | 0 | 0 | A | A' | 0 | A | A' | 0 | A | 0 | A |

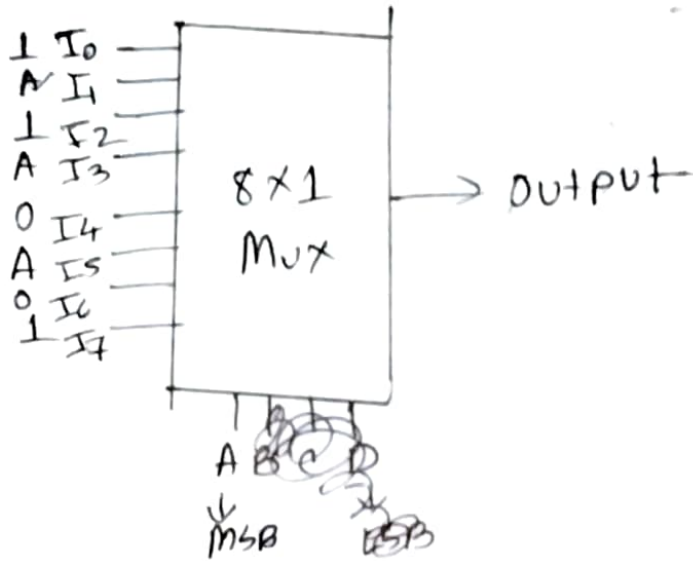


Sub: _____

DATE _____

6/8:1 Mux

| | I_0 | I_1 | I_2 | I_3 | I_4 | I_5 | I_6 | I_7 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| A | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | 1 | A | 1 | A | 0 | A | 0 | 1 |

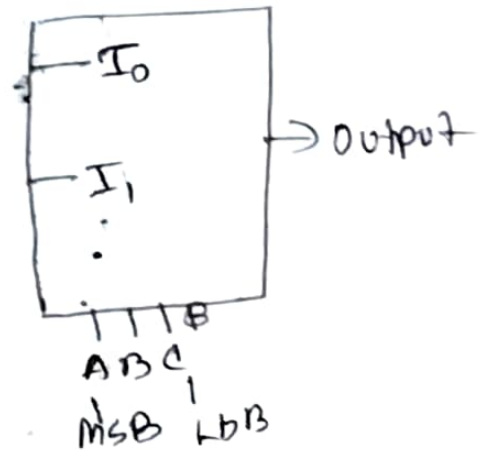


C/2:1 Mux

| | I_0 | I_1 |
|----------|-------|-------|
| $A'B'C'$ | (0) | (1) |
| $A'B'C$ | (2) | 3 |
| $A'B'C'$ | 4 | 5 |
| $A'B'C$ | 6 | (7) |
| $AB'C'$ | (8) | 9 |
| $AB'C$ | (10) | (11) |
| $AB'C$ | 12 | (13) |
| ABC | 14 | (15) |

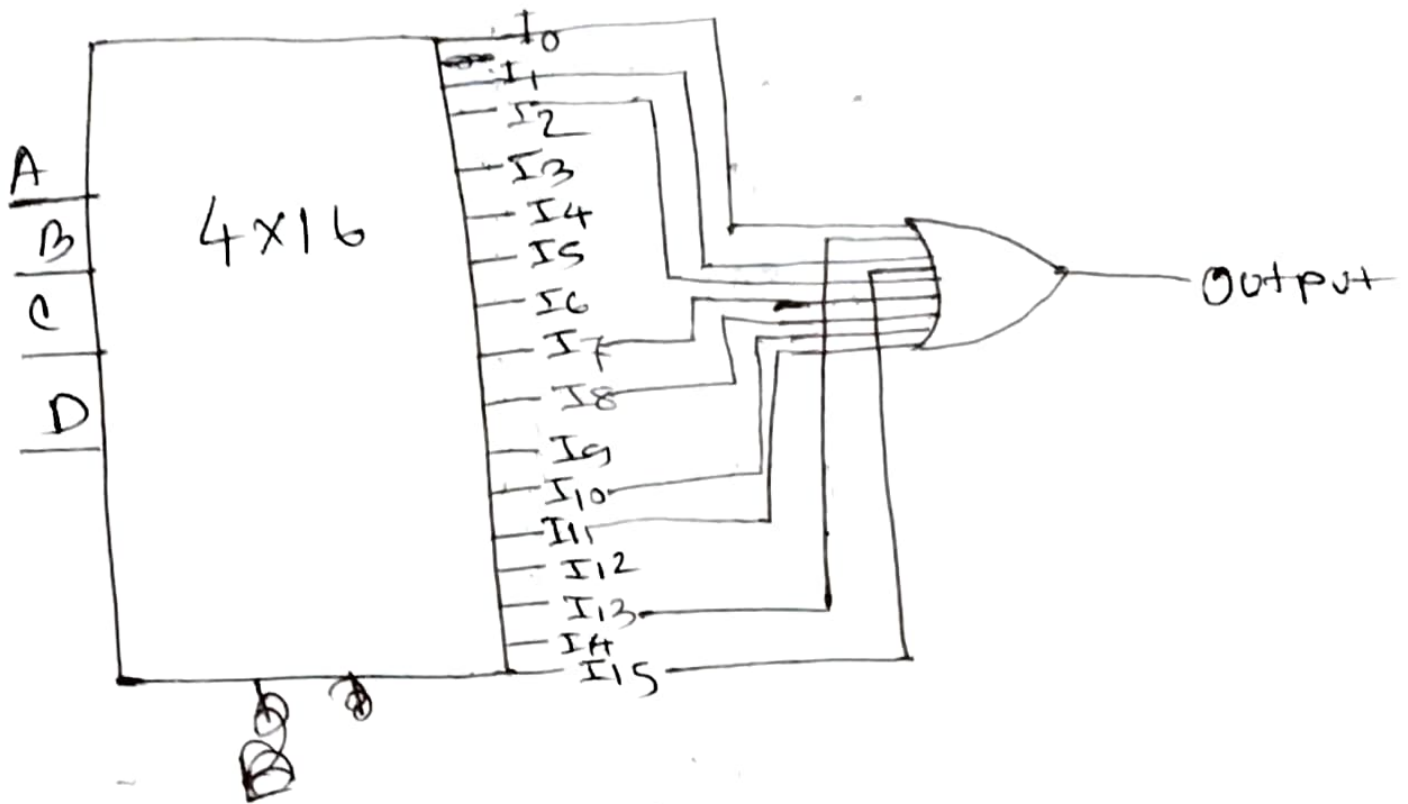
$$I_0 = A'B'C' \pm A'B'C \pm AB'C' \pm AB'C$$

$$I_1 = A'B'C' \pm A'BC \pm AB'C \pm A'BC' \pm A'BC'$$

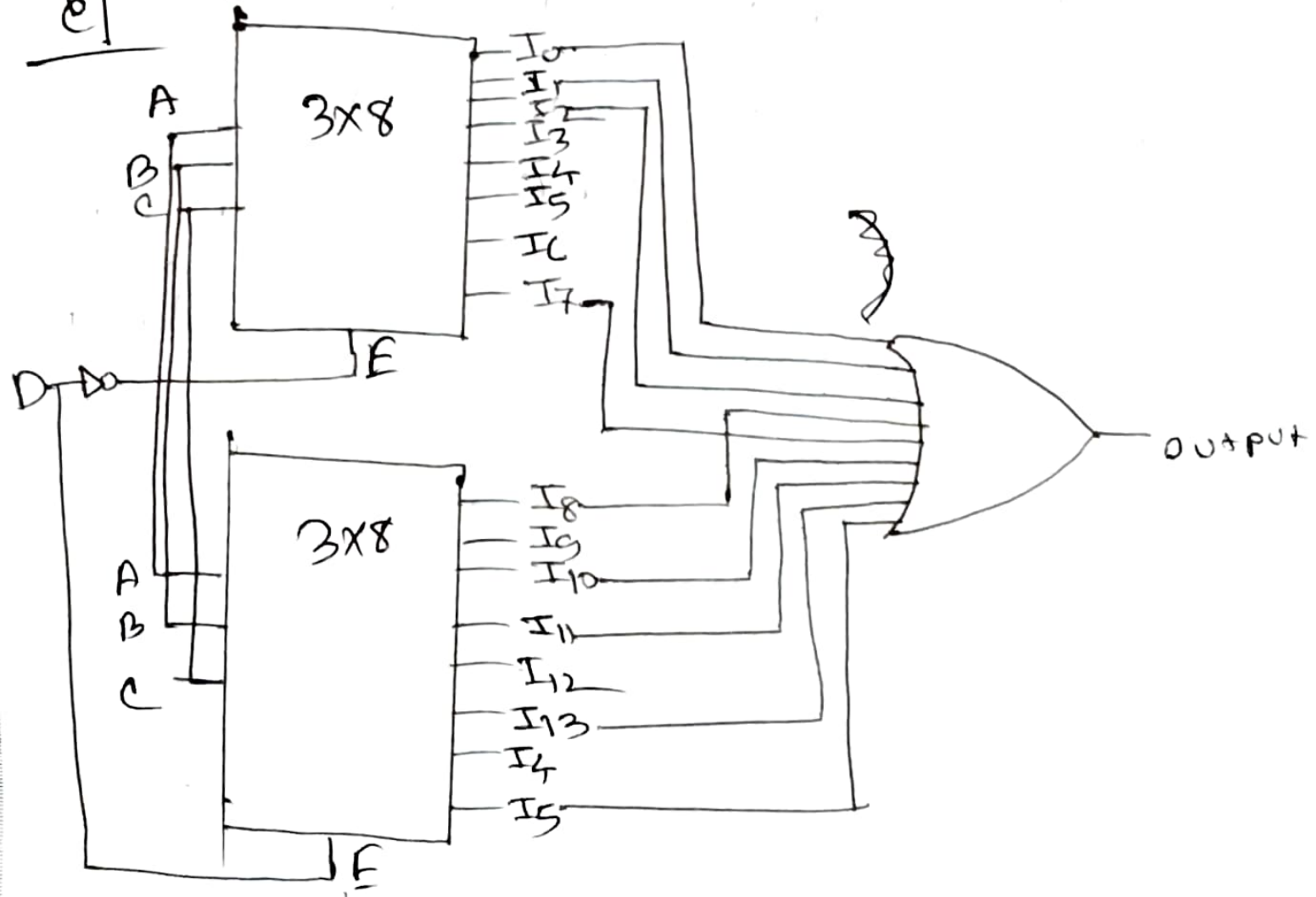


d) 4:16 encoder

$$F(A, B, C, D) = \sum (0, 1, 2, 7, 8, 10, 11, 13, 15)$$



e) 3x8 decoder



f1 2:4 decoder

