Truth table of Decimal to BCD - excess -1.

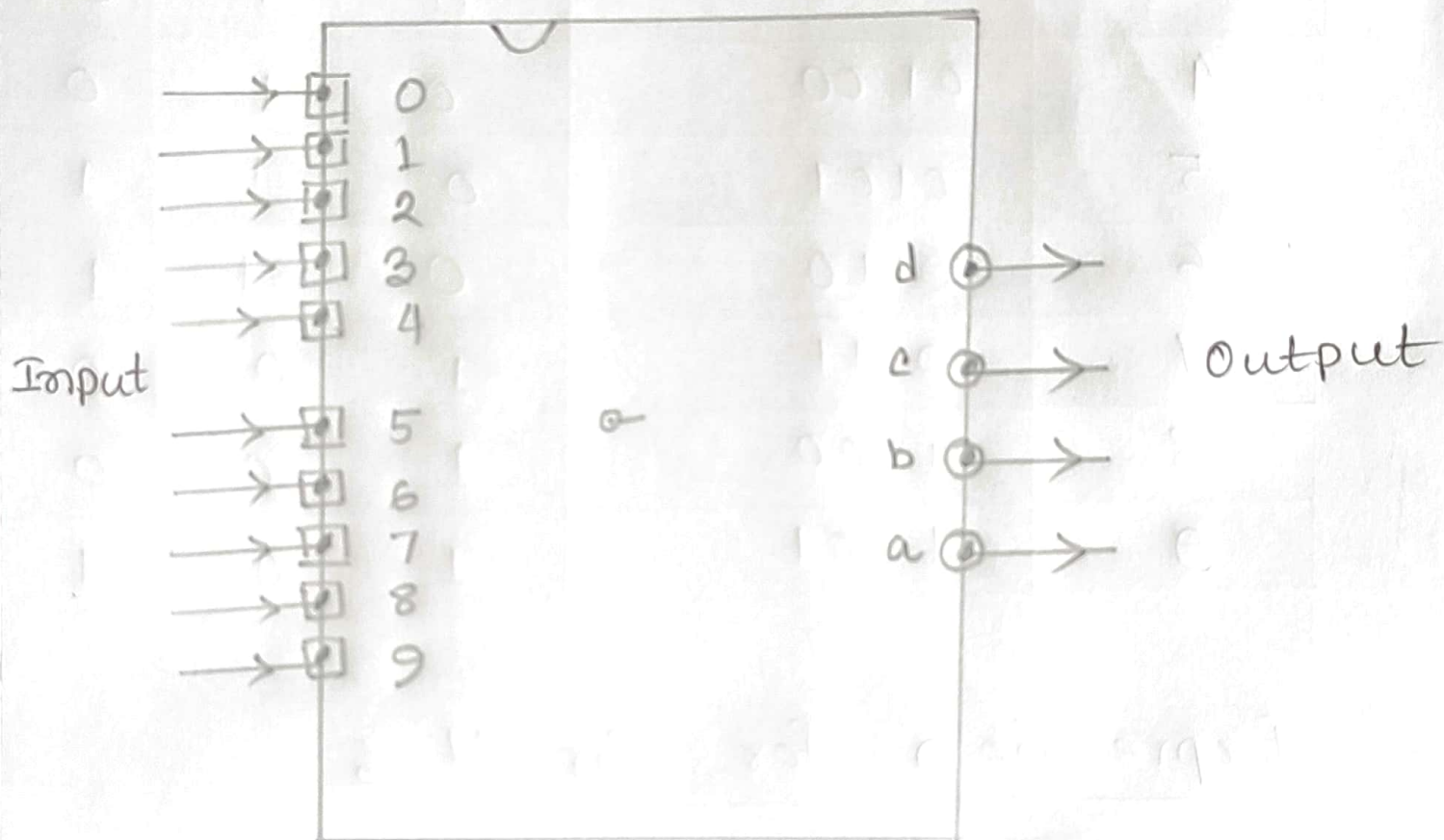| Decimal	BCD	BCD Excess - 1			
		B_3	B_2	B_1	B_0
0	0000	0	0	0	1
1	0001	0	0	1	0
2	0010	0	0	1	1
3	0011	0	1	0	0
4	0100	0	1	0	1
5	0101	0	1	1	0
6	0110	0	1	1	1
7	0111	1	0	0	0
8	1000	1	0	0	1
9	1001	1	0	1	0

Expression for Circuit :

$$B_0 = 0 + 2 + 4 + 6 + 8$$

$$B_1 = 1 + 2 + 5 + 6 + 9$$

$$B_2 = 3 + 4 + 5 + 6$$

$$B_3 = 7 + 8 + 9$$

Block diagram of Decimal to BCD

Excess - 1 :

Input

0
1
2
3
4

5
6
7
8
9

d →

c → Output

b →

a →

[Here, d is the MSB]