SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECB204 – LINEAR AND DIGITAL CIRCUITS

II YEAR/ III SEMESTER

UNIT 4 – COMBINATIONAL and SEQUENTIAL CIRCUITS

TOPIC - Code Converters (Excess 3 to BCD and BCD to Excess 3)

What is a Excess-3 and BCD code?

➢ **Excess-3 code** is non-weighted and self complementary code.

➢ **BCD** is a class of binary encodings of decimal numbers where each digit is represented by a fixed number of bits, usually four or eight.

BCD to Excess 3

BCD to Excess 3

BCD INPUT				EXCESS-3 OUPUT			
B3	B2	B1	B0	E3	E2	E1	E0
0	0	0	0	0	0	1	1
0	0	0	1	0	1	0	0
0	0	1	0	0	1	0	1
0	0	1	1	0	1	1	0
0	1	0	0	0	1	1	1
0	1	0	1	1	0	0	0
0	1	1	0	1	0	0	1
0	1	1	1	1	0	1	0
1	0	0	0	1	0	1	1
1	0	0	1	1	1	0	0
1	0	1	0	X	X	X	X
1	0	1	1	X	X	X	X
1	1	0	0	X	X	X	X
1	1	0	1	X	X	X	X
1	1	1	0	X	X	X	X
1	1	1	1	X	X	X	X

BCD to Excess 3

1. BCD code to Excess-3 code converter.

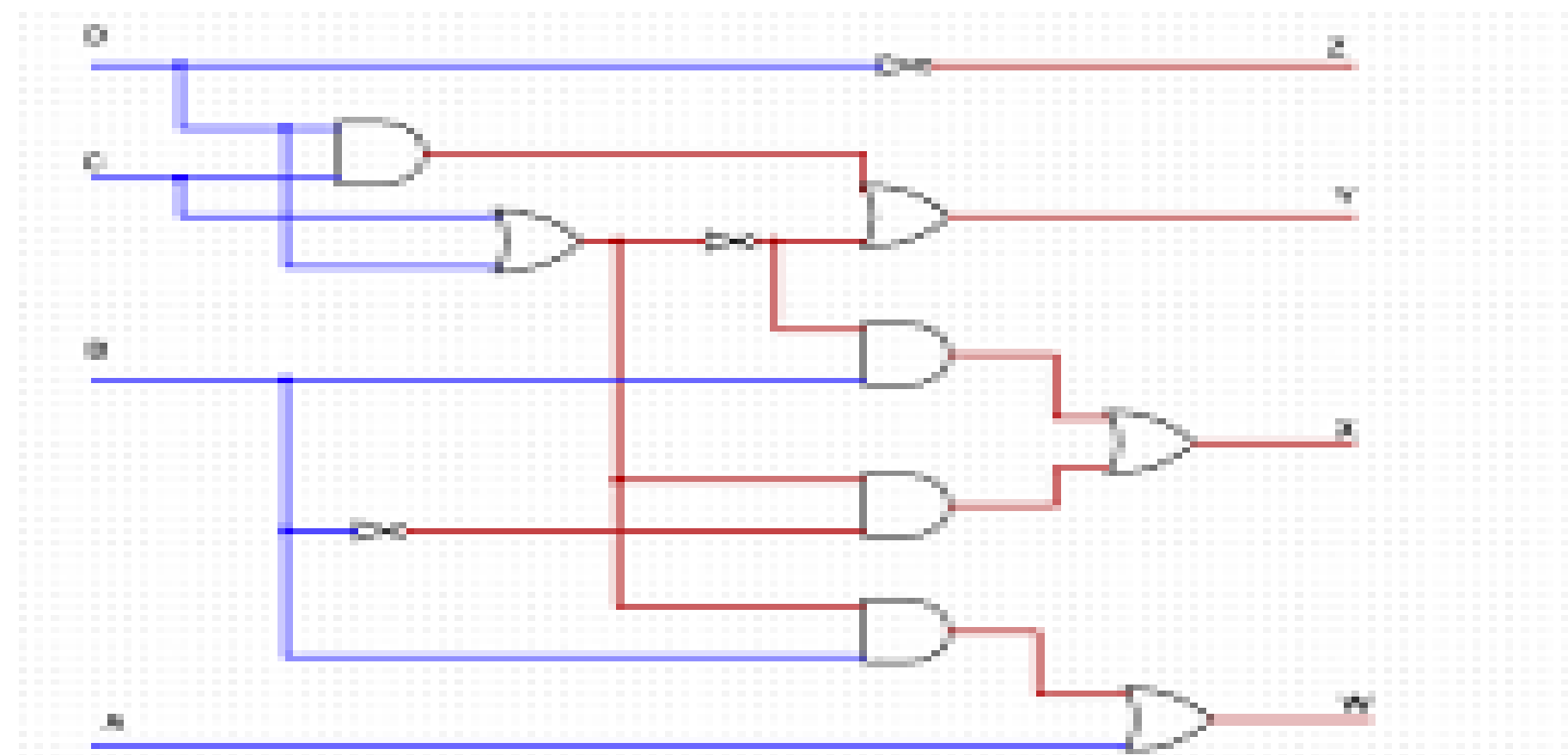   Consider the logic diagram below for BCD to Excess-3 code converter
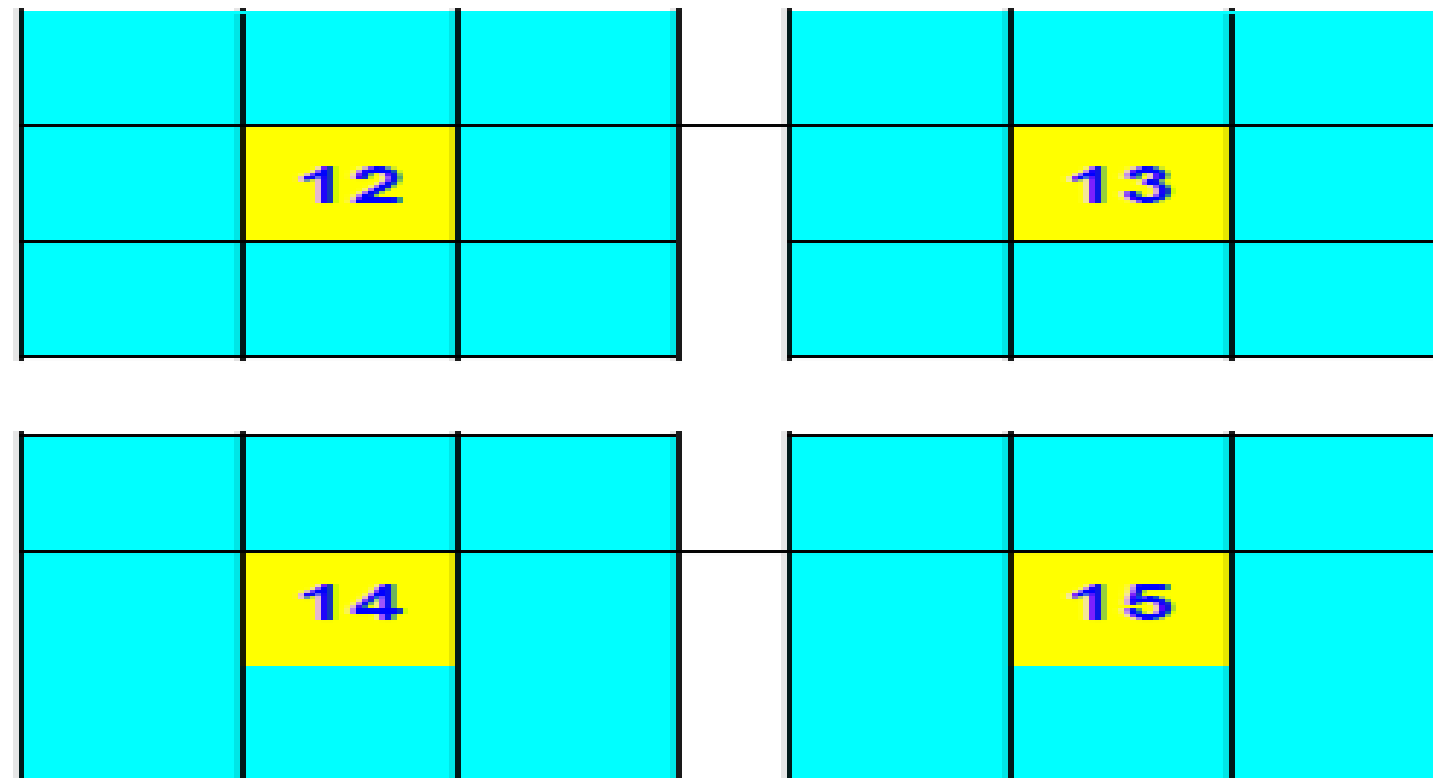

Figure 1: BCD to excess-3 code converter.

ACTIVITY

Excess 3 to BCD

2. Excess-3 code to BCD code converter.

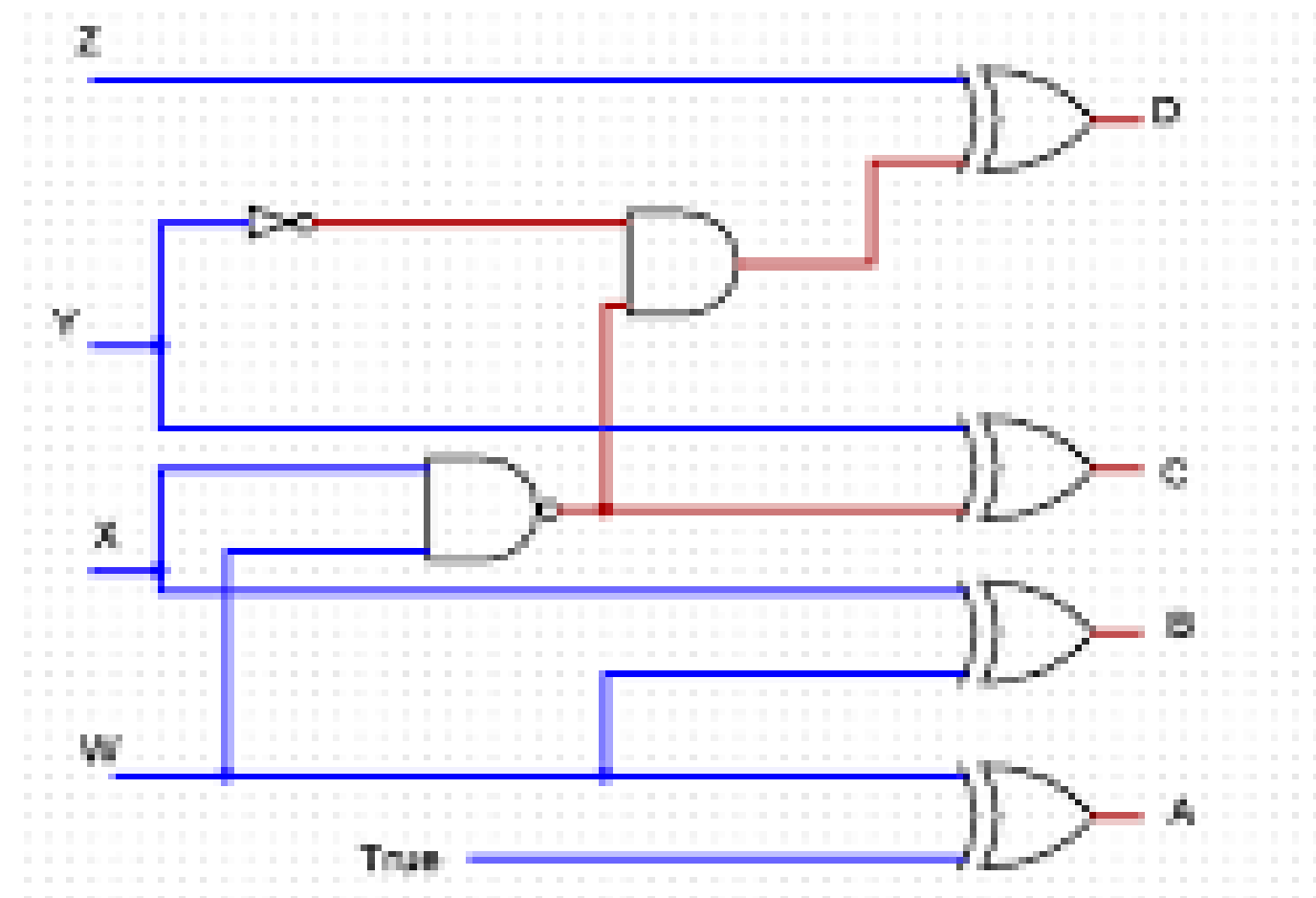Consider the logic diagram below for Excess-3 code to BCD converter

Figure 2: Excess-3 to BCD code converter

Excess 3 to BCD

Truth Table :

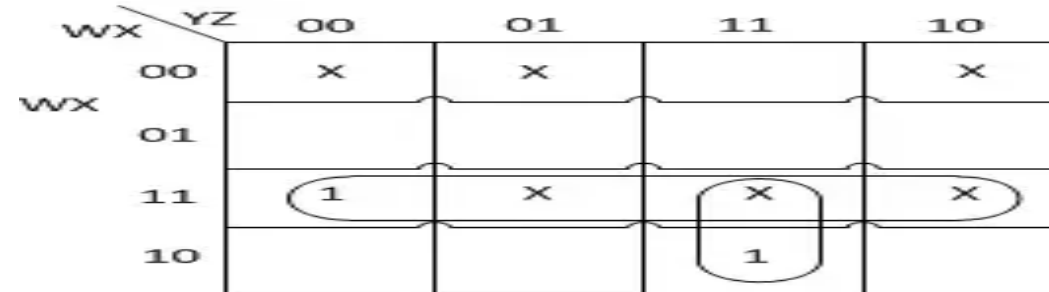| Inputs					Outputs			
W	X	Y	Z		A	B	C	D
0	0	1	1		0	0	0	0
0	1	0	0		0	0	0	1
0	1	0	1		0	0	1	0
0	1	1	0		0	0	1	1
0	1	1	1		0	1	0	0
1	0	0	0		0	1	0	1
1	0	0	1		0	1	1	0
1	0	1	0		0	1	1	1
1	0	1	1		1	0	0	0
1	1	0	0		1	0	0	1

MAP :

Fig: Map for A
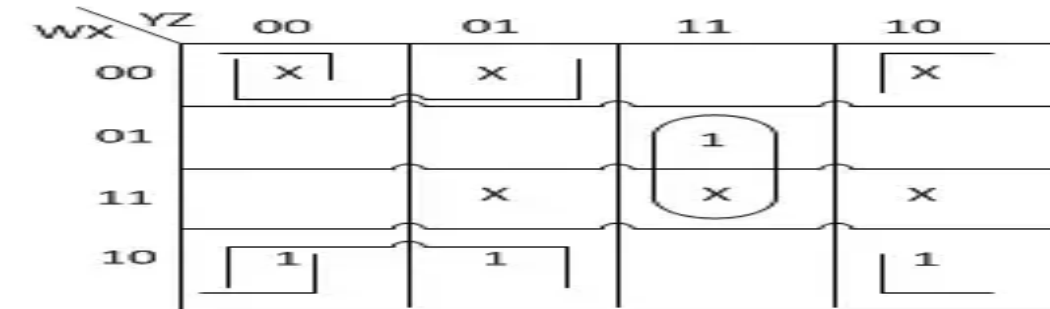
$$A = WX + WYZ$$

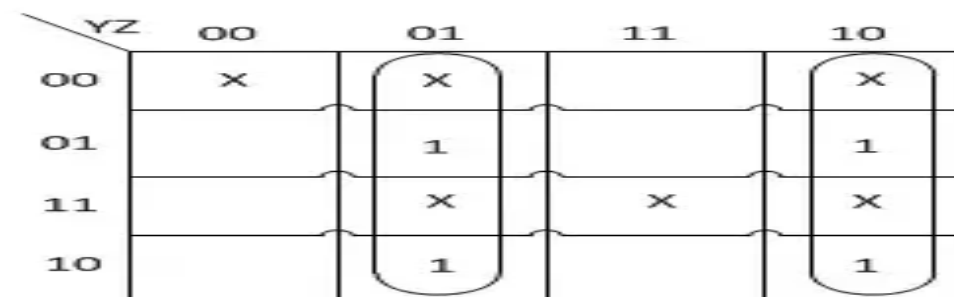Fig: Map for B

$$B = XY' + XYZ + XZ'$$

Fig: Map for C

$$C = Y'Z + YZ'$$
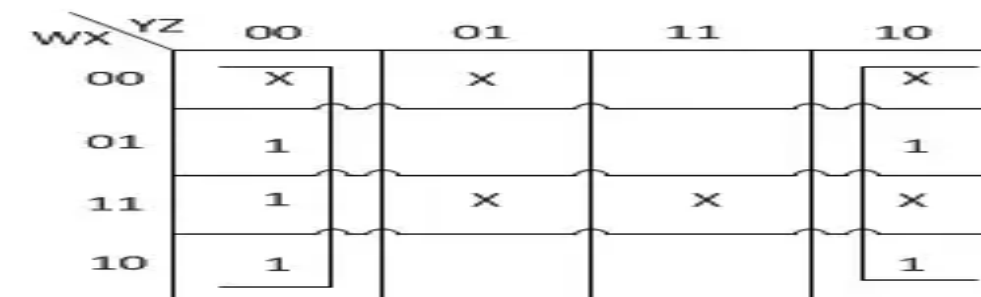OR
$$C = Y \oplus Z$$

Fig: Map for D

$$D = Z'$$

Excess- 3 to BCD Code

2. Excess-3 code to BCD code converter.

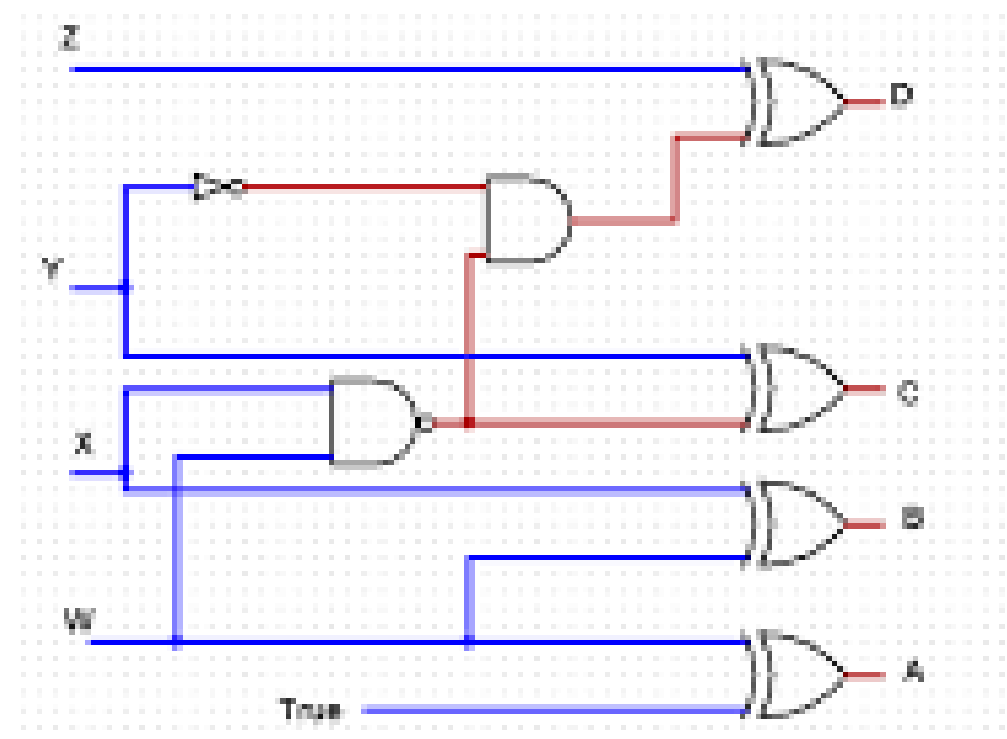Consider the logic diagram below for Excess-3 code to BCD converter

Figure 2: Excess-3 to BCD code converter

ASSESSMENT

1. _____a_____ is used in simplifying _____b_____
b) APM ARNAKGHU
a)   RACE TOND NOCIDIONT

2. Name the gate which is called a coincidence detector? Justify

3. Name the gate which can be used as switch? Justify your reason

4)How many AND gates and OR gates are required to realize the expression Y=BD+CA+EF+GH. Explain

5)The complement function can be done by using an _____(RTENIERV

THANK YOU

Code Converters (Excess 3 to BCD and BCD to Excess 3)/ LINEAR AND DIGITAL CIRCUITS/Mr.N.Arunkumar/AP/ECE/SNSCT