

ID: 2116080021

NAME: Ghulam Farhanul
Bashar

Final Assessment

Summer 2023

Date: 10 October 2023

Program BSc in CSE

Course Code CSE 213

Course Title Digital Logic Design

Dept of CSE/CSIT

Victoria University

Bangladesh

$$\text{Ans 1) a) } A + A'B$$

$$= A'B + A$$

$$= B + A$$

$$= A + B$$

Applying $\bar{A}B + A = B + A$

$$\text{Ans 1) b) } A'B' + AB$$

$$= A'B' + AB$$

$$= AB + A'B'$$

$$= A'B' + AB$$

$$\text{Ans 1) c) } (A+B)(A+C)$$

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

$$= AA + AC + (A+C)B$$

$$= A + AC + (A+C)B \quad \{ AA = A,$$

$$= A + (A+C)B \quad \{ A + AB = A,$$

$$= A + AB + BC$$

$$= A + BC$$

$$\text{Ans 1) d) } (A+B+C+D)'$$

$$= A'B'C'D'$$

$$\text{Ans 1) e) } (ABCD)'$$

$$= A' + B' + C' + D'$$

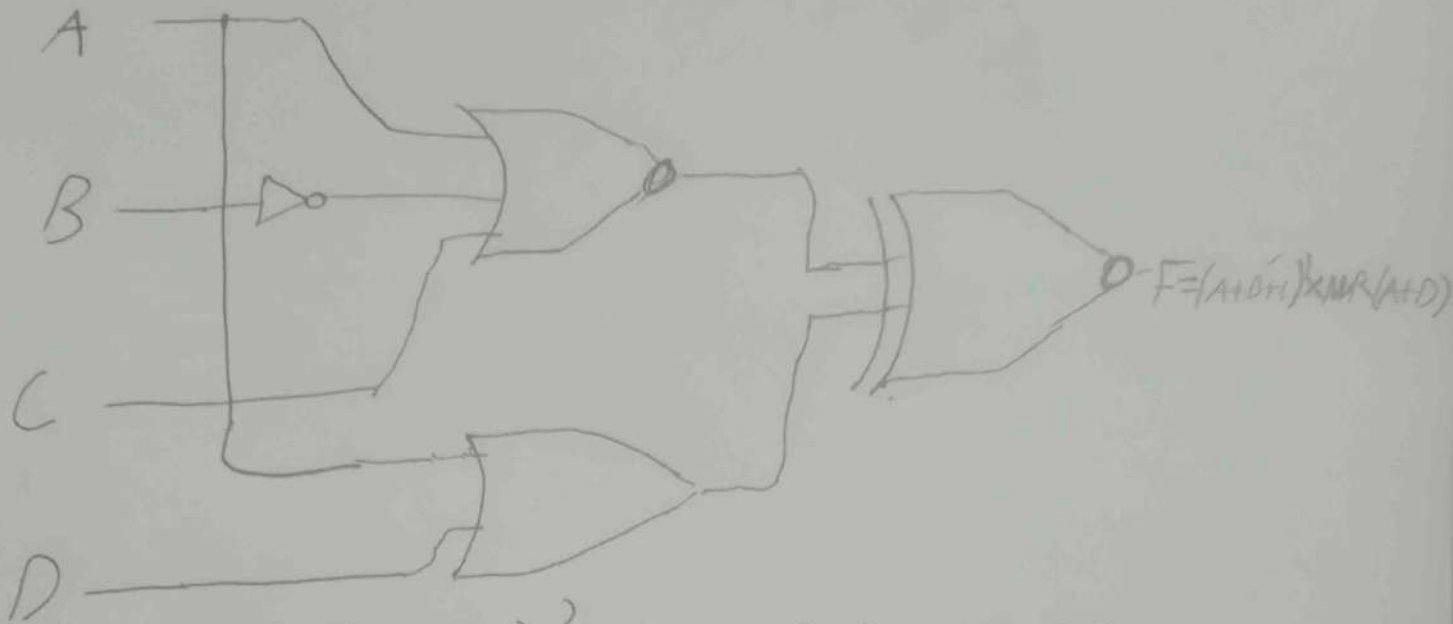
$$\begin{aligned}
\text{Ans 2) a) } & (A'B + A'B') + (A'B' + AB) \\
& = A'B + A'B + A'B' + AB \\
& = A'B + A'B' + AB \quad | \quad A+A=A \\
& = A'(B+B') + AB \\
& = A'1 + AB \quad | \quad A+A'=1 \\
& = A' + AB \quad | \quad 1A=A \\
& = A' + B \quad | \quad AB+A' = B+A'
\end{aligned}$$

$$\begin{aligned}
\text{Ans 2) b) } & A'B'C + A'BC' + AB'C' + ABC \\
& = ABC + A'BC' + A'B'C + AB'C \\
& = A'B'C + A'BC' + AB'C' + ABC
\end{aligned}$$

Ans 3) a) It is a Full adder circuit.

Full adder is a combinational circuit that performs addition operation of 3 input bits. It basically consists three inputs and two outputs. The two output variable are expressed by Sum and carry. Full adders are implemented with logic gates in hardware. Full adders are utilized in counter, memory addressing circuit and many others.

Ans 3) b)



$$F = (A + B' + C)' \times \text{NOR}(A + D)$$

Ans 4) a) Truth table for the ~~Function (3a)~~ Function (3a)

X	Y	C	Sum	Carry
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1