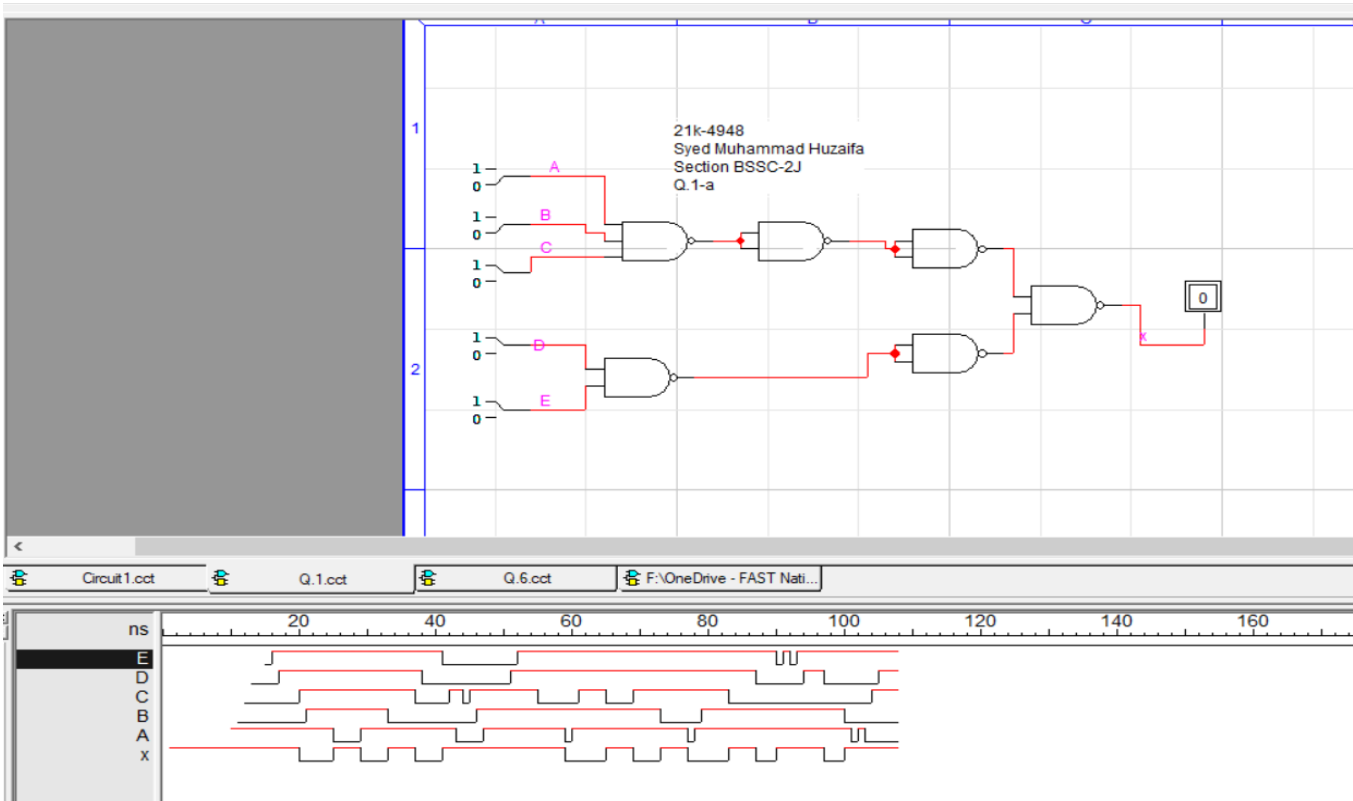
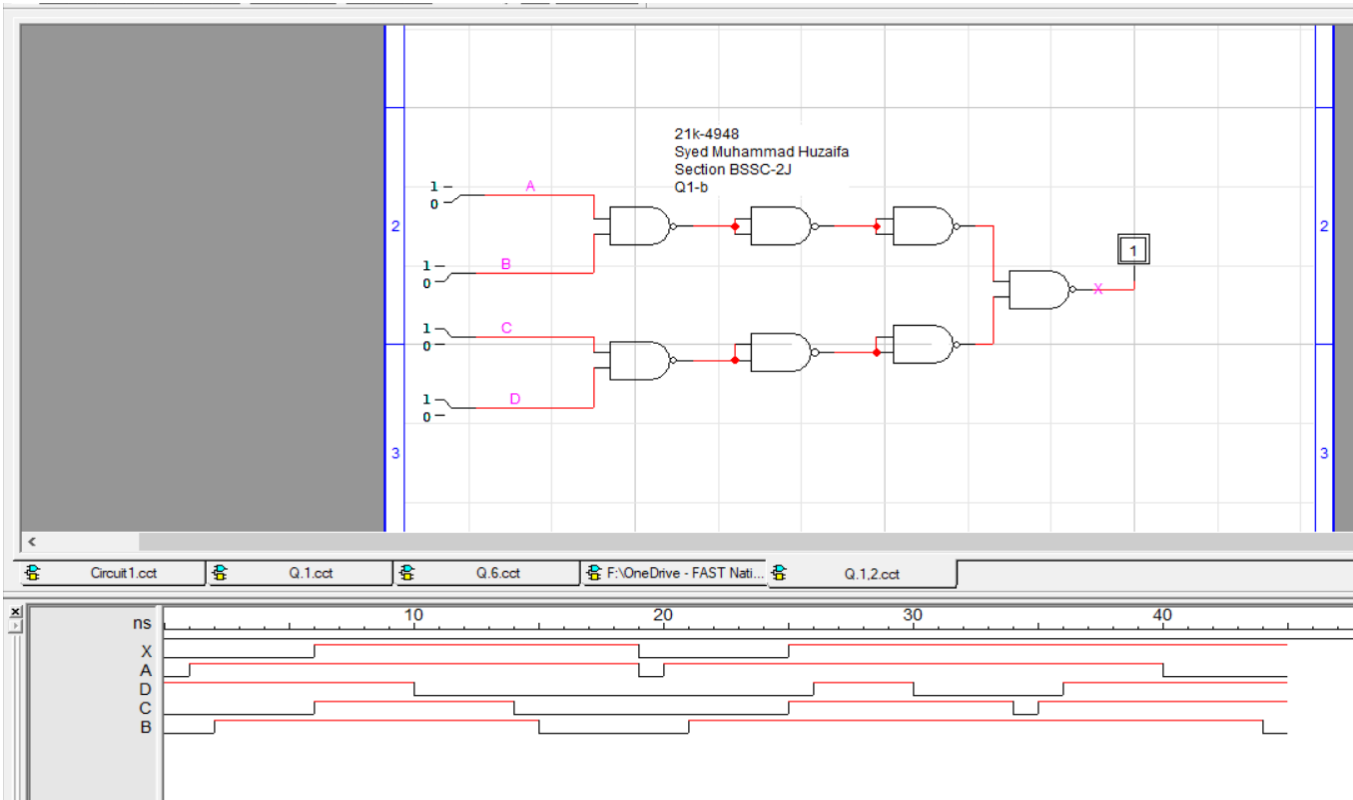


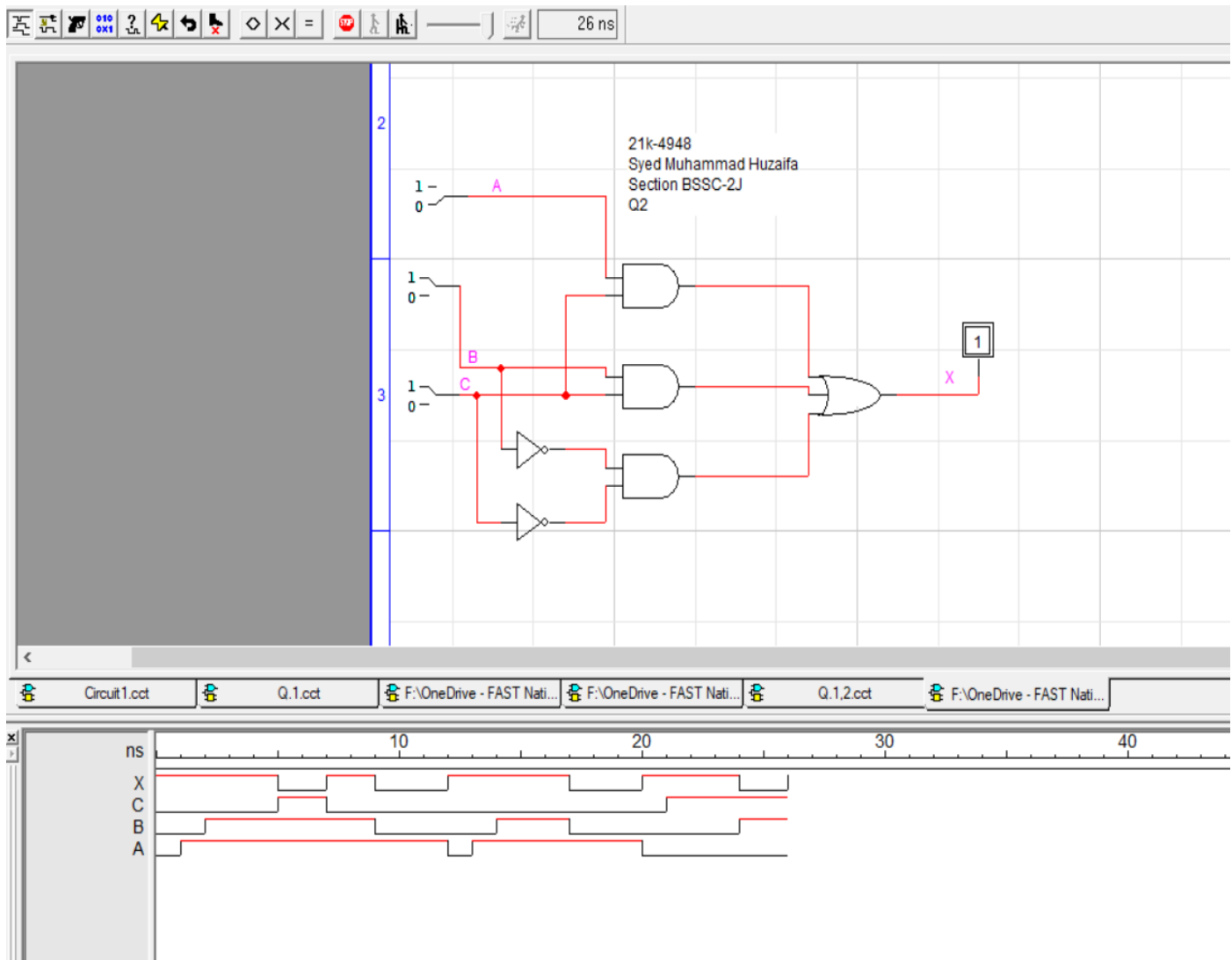
Question No 1

Q.1-a



Q1-b



Question No 2

21k-4948

Question no 4102

$$\begin{aligned}
 & ABC + A\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}C + ABC \\
 &= \bar{A}BC + \bar{B}\bar{C}(A+\bar{A}) + AC(B+\bar{B}) \\
 &= \bar{A}BC + \bar{B}\bar{C} + AC \\
 &= C(A+\bar{A}B) + \bar{B}\bar{C} \\
 &= C(A+B) + \bar{B}\bar{C} \\
 &= AC + BC + \bar{B}\bar{C}
 \end{aligned}$$

Question No 3

Q.3

(i)

B \ C	0	1
0	1	1
1	1	1

(a.) ϕ group of ones = SOP
 $= \bar{A}\bar{B}\bar{C} + AB + BC$

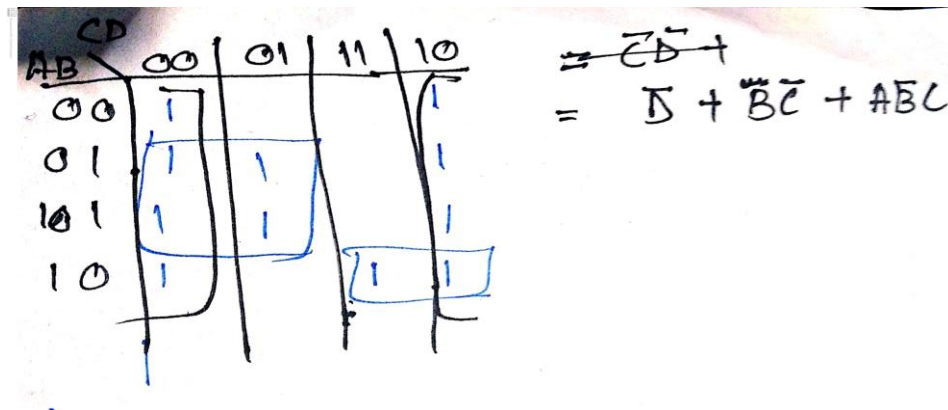
(b) $(0+0+1)(0+1+0)(1+0+0)(1+0+1)$
 $= (A+B+\bar{C})(A+\bar{B}+C)(\bar{A}+B+C)(\bar{A}+B+\bar{C})$

B \ C	0	1
0	1	1
1	1	1

$$= \bar{B} + \bar{A}\bar{C} + AC$$

B \ C	00	01	11	10
00	1	1		
01	1	1	1	1
11				
10		1	1	

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

**Question No 4**

A	B	C	D	X
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	0
1	1	1	0	1
1	1	1	1	0

4

$$\overline{B}\overline{C}\overline{D} + \overline{A}B\overline{C}\overline{D} + A\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}C\overline{D} + A\overline{B}C\overline{D} + \overline{A}B\overline{C}D + A\overline{B}C\overline{D} + \overline{A}B\overline{C}D$$

$$+ A\overline{B}C\overline{D} + A\overline{B}C\overline{D}$$

	CD	00	01	11	10
AB	00	1		1	1
	01	1			1
	11	1			1
	10	1	1	1	1

$$= \overline{B} + \overline{B}CD$$

Question No 5

A	B	C	D	X
0	0	0	0	0
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	0
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	1
1	1	1	1	1

5.) $(B+C+D)(A+B+\bar{C}+D)(\bar{A}+B+C+\bar{D})(A+\bar{B}+C+D)(\bar{A}+\bar{B}+C+D)$
 $(0+0+0) (0+0+1+0) (1+0+0+1) (0+1+0+0) (1+1+0+0)$

AB \ CD	00	01	11	10
00	0			0
01	0			
11				
10	0	0		

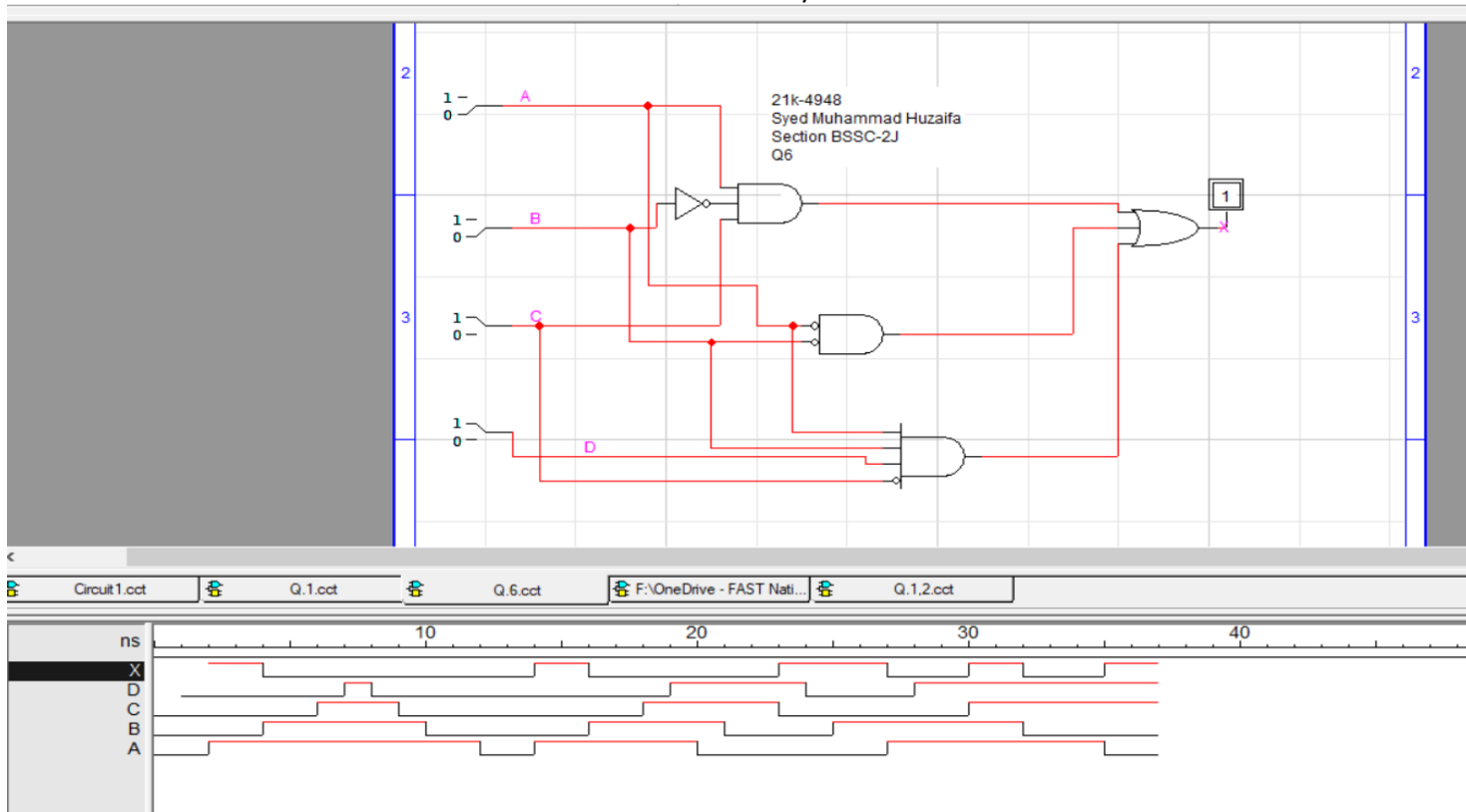
$= (C+D) \cdot (A+B+C) (A+B+D)$

Question No 6

$A\bar{B}C + \bar{A}\bar{B} + AB\bar{C}D$
 $= (ABC)(D+\bar{D}) + \bar{A}\bar{B}(C+\bar{C})(D+\bar{D}) + AB\bar{C}D$
 $= A\bar{B}CD + A\bar{B}C\bar{D} + \bar{A}\bar{B}(CD + C\bar{D} + \bar{C}D + \bar{C}\bar{D}) + AB\bar{C}D$
 $= A\bar{B}CD + A\bar{B}C\bar{D} + \bar{A}\bar{B}CD + \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}\bar{C}\bar{D} + AB\bar{C}D$

AB \ CD	00	01	11	10
00	1	1	1	1
01				
11		1		
10			1	1

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

**Question No 7**

$$\begin{aligned}
 & \textcircled{1} (A + \bar{B} + C)(\bar{B} + C + D)(A + B + \bar{C} + D) \\
 & \quad \textcircled{2} \text{PIQ} \\
 & = \{(A + \bar{B} + C)(D \cdot \bar{D})\} \{(\bar{B} + C + D)(A \cdot \bar{A})\} (A + B + \bar{C} + D) \\
 & = (A + \bar{B} + C + D)(A + \bar{B} + C + \bar{D})(\bar{B} + C + D + A)(A + B + \bar{C} + \bar{D}) \\
 & \quad (A + \bar{B} + \bar{C} + D)
 \end{aligned}$$

