



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

**NATIONAL CERTIFICATE
DIGITAL ELECTRONICS N5**

30 August 2021

This marking guideline consists of 6 pages.

2.3 $122, 75_{10} = 1111010, 11_2 \checkmark$
 $12E, C_{16} = 100101110, 11_2 \checkmark$

	0	0	1	1	1	1	0	1	0,	1	1	
	1	0	0	1	0	1	1	1	0,	1	1	-
2's complement	0	1	1	0	1	0	0	0	1,	0	1	✓
	0	0	1	1	1	1	0	1	0,	1	1	+
No complement	1	0	1	0	0	1	1	0	0,	0	0	✓
2's complement -	0	1	0	1	1	0	1	0	0,	0	0	✓

Answer: - 1 0 1 1 0 1 0 0₂ = -1 8 0₁₀ ✓

(6)
[18]

QUESTION 3

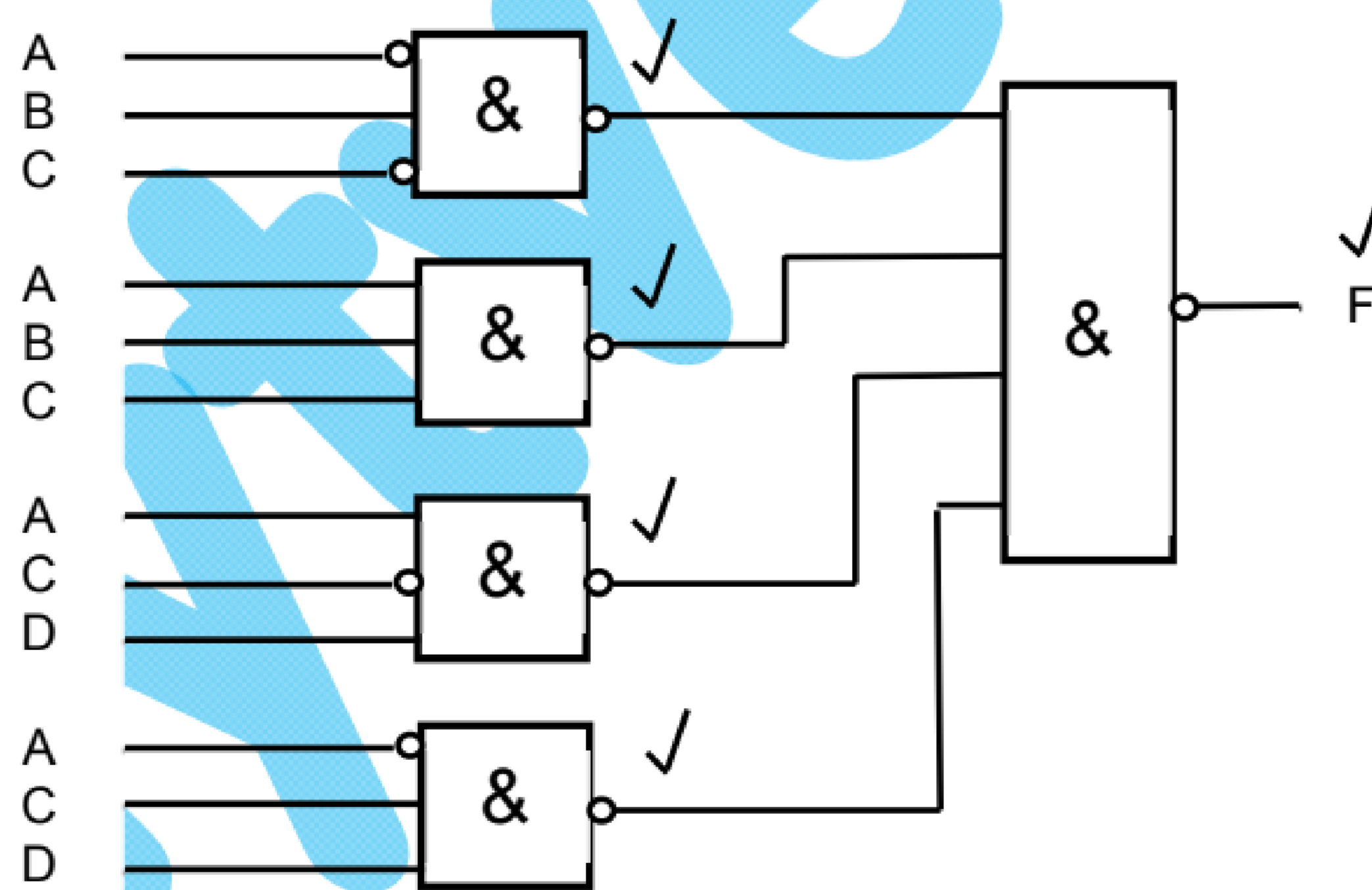
3.1

	$\bar{A}\bar{B}$	$\bar{A}B$	AB	$A\bar{B}$
$\bar{C}\bar{D}$		1		
$\bar{C}D$		1	1	1
CD ✓	1	1	1	
$C\bar{D}$			1	

OR
✓

	$\bar{C}\bar{D}$	$\bar{C}D$	CD	$C\bar{D}$
$\bar{A}\bar{B}$			1	
$\bar{A}B$	1	1	1	
AB		1	1	1
$A\bar{B}$		1		

$$\begin{aligned}
 F_{ABCD} &= \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{C}D + \bar{A}C\bar{D} \checkmark\checkmark\checkmark\checkmark \\
 &= \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + \bar{A}C\bar{D} + \bar{A}C\bar{D} \checkmark \\
 &= \bar{A}\bar{B}\bar{C} \cdot \bar{A}B\bar{C} \cdot A\bar{B}\bar{C} \cdot \bar{A}C\bar{D} \cdot \bar{A}C\bar{D} \checkmark
 \end{aligned}$$



Note: To create an inverted input, the inputs of a two-input NAND gate should be connected together. The inverter shown by these inputs is purely to make the drawing simpler.

(12)