

CS-350: Computer Organization

Spring 2003: Quiz # 2 ANSWERS

Below are several Truth Tables, each describing some kind of logical operation. For each numbered Truth Table, indicate the lettered choice that most completely describes the logical operation depicted:

1 pt each

1:		
A	B	Out
0	0	1
0	1	0
1	0	1
1	1	1

2:		
A	B	Out
0	0	0
0	1	1
1	0	0
1	1	0

3:		
A	B	Out
0	0	1
0	1	0
1	0	0
1	1	0

4:		
A	B	Out
0	0	0
0	1	1
1	0	1
1	1	0

5:		
A	B	Out
0	0	1
0	1	0
1	0	1
1	1	0

A	A + B	
B	A'•B	Row B is identical to row E
C	A•B'	
D	A∨B'	
E	A'∧B	A'∧B ≡ A'•B
F	A'	
G	A XOR B	
H	A XNOR B	
I	more than one of the above	
J	none of the above	

6. The logic gate depicted in this diagram is an example of:



Explanation of Answer: This diagram depicts a NOR gate, which is not listed in (a . . e).

- a) an OR gate.
- b) an AND gate.
- c) a NAND gate.
- d) an XOR gate.
- e) an XNOR gate.
- f) none of the above.

2 pts

7. Application of DeMorgan's Theorem: In Boolean algebra, $(X' + Y•Z)'$ =

3 pts

- a) $X + Y'•Z$
- b) $(X + Y'•Z)'$
- c) $X•(Y' + Z)$
- d) $X'(Y + Z')$
- e) none of the above

Explanation of Answer: Apply both forms of DeMorgan:

$$(X' + Y•Z)' = (X')'•(Y•Z)' = X•(Y' + Z')$$

Alternatively, a Truth Table would demonstrate the correctness of the answer.

Question	Answer
1	D
2	I
3	J
4	G
5	J
6	F
7	C