

IE1204 Digital Design Answer Form 2022-2023

Full Name		Personal Number		Program						
Practice Exam Fall 2022		YYYYMMDD-XXXX		NN						
#	Answer with	Answer				Points				
1	Decimal number	84				1				
2	8 bit two's complement binary number	0	1	1	1	1	0	0	1	
3	8 bit two's complement binary number	1	0	1	1	1	1	1	0	1
4	Circuit number(s)	#3				1				
5	Boolean expression, Y =	$\overline{A} \cdot \overline{B} \cdot \overline{C} + \overline{C} \cdot D + A \cdot B$				1				
6	Boolean expression, Y =	$B \cdot \overline{D} + \overline{B} \cdot D = (\overline{B} + \overline{D})(B + D) = B \oplus D$				1				
7	MUX connections, Boolean expression or Gate	\overline{B}				1				
	Row CD = 00	$\overline{A} \cdot B$								
	Row CD = 01	$A \cdot \overline{B}$								
	Row CD = 10	1								
	Row CD = 11	1								
8	Timing diagram					1				
9	Timing diagram					1				
10	Propagation delay $t_{pd} \leq$	100		ps		1				
	Contamination delay $t_{cd} >$	20		ps						
11	Next state $Q_3Q_2Q_1Q_0 =$	0110				1				
12	Boolean expression or Gate, Y =	$Q_3 \cdot Q_1 \cdot Q_0$				1				
13	16 bit two's complement hexadecimal Product A x B	P		14D6		1				
14	8 bit two's complement hexadecimal Quotient (A / B) and Remainder	Q		7	R		8	1		
15	8 result bits ($S_7 S_6 S_5 S_4 S_3 S_2 S_1 S_0$)	1	0	1	0	1	1	0	0	1
16	Shift register contents, 8 bits	0	1	0	0	1	1	0	0	1
TOTAL POINTS		Examiner sign				16				