CDA 3103 – Computer Organization (Spring 2005) Quiz # 2

Last N NID	Name : :]	First Na	me	:				-
<u>Note:</u>	<u>Show all inte</u> Maximum tin	e <mark>rmediate steps.</mark> C ne allowed is 10 n	Correct a <mark>iinutes</mark> .	answer .	<u>without</u>	<u>steps</u>	will car	ry less	<u>than 50</u>	<u>% cr</u>	edit.
Quest	t ion # 1 : Using	<u>1's complement</u>	represer	ntation,	Conver	t -121	into an	<u>8-bit</u> b	inary nu	mbei	. [2 points]
121	=	1111001								2	121
	_ make 8-bit	01111001								$\frac{2}{2}$	60 - 1 30 - 0
	—	01111001								2	15 - 0
	= ^{1's Comp}	10000110								2	7 – 1
										2	3 – 1
<u>Final</u>	Answer				1.	1.				2	1 - 1
	1	0 0	0	0	1	1	0			2	0 – 1

Question # 2: Express the given decimal number into IEEE single precision floating point representation(biased)? [4 points]- 43.125

			2 * 0.125	0.25 + 0	2	43
43.125	=	101011.001	2 * 0.25	0.5 + 0	2	21 - 1
	=	$1.01011001 * 2^{5}$	2 * 0.5	0 + 1	2	10 – 1
Sign	_	1			2	5 - 0
Sign E	_	$\frac{1}{5 + 127 + 122} \qquad (10000100)$			2	2 - 1
Exponent	=	$5 + 127 = 132 = (10000100)_2$			2	1 - 0
Mantissa	=	0101100100000000000000			2	0 - 1
TI I I I					<i>L</i>	

<u>Final Answer</u>

Sign	Exponent							Significant																							
1	1	0	0	0	0	1	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Question # 3: What is <u>decimal equivalent</u> of the given 32-bit number represented in <u>IEEE single precision</u> <u>floating point representation (biased)</u>? [4 points]

1	1	0	1	1	1	0	0	1	1	1	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sig Ex Ma	gn apor anti	nent ssa	-	=		1 1 1	01	110 110	01 0001	111	=		18:	5 –	127		=		5	8												
Nι	ımb	oer i	S	=		-	1 *	(1.1	111	100	011	1)2	* 2	58	=		-1	* ((111	11(000	111)2 *	2 ⁴⁸		=		-1	* 19	991	* 2'	48
<u>Fi</u>	<u>nal</u>	An	SWE	<u>er</u>		(-	1 *	199	91 *	²⁴⁸	3)	10																	