Final Problem 6 John-Paul McDonald

1a) $15.875 \times 16^1 = 254$

$15 \times 16^1 = 240$

$.875 \times 16^1 = 14$

$F.E_{16}$

1111.1110_2

17.7_8

$\{0000\ 0100\}$ (4)

2a) $0.1111.1110_2 \times 2^{+4}$

0.111 1111 | 0000 0000 | 0000 0000 | 0000 0100

7 F 0 0 0 0 0 4

NASA = 7F000004

3a) $F.E_{16}$

1111.1110

11111110×2^4 1 Byte

4a) $\times\ 00000111$ (7)

11111110

11111100

+ 11111000

110111110010

6 F 2

1778

1111 1110

+ 11111100

100111010

+

Sa) 1778 → IEEE 754

0110 1111 0010

$0.10\ 1111\ 0010 \times 2^{10}$ 127 + 10

137

0 | 10001001 | 10111110 | 01000000 | 00000000

4 4 D E 4 0 0 0

IEEE 754 · 1778 = 44DE4000

6 F . 2 127 + 6

$0110\ 1111.0010 \times 10^{6}$ 133

0 | 10000101 | 10111100 | 00000000 | 00000000

4 2 D E 0 0 0 0

1b) $0,7 \times 16 = 11.2$

$11.2 \times 16 = 3.2$

$3.2 \times 16 = 3.2$ etc.

$= .B\overline{3}_{16}$

$.1011|1001|1001|1001|1011_2$

$.59631_8$

2b) $0.1011|0011|0011|0011_2 \times 2^0$

$0.10110011|00110011|00110011|00000000$

$5 \quad 9 \quad 9 \quad 9 \quad 9 \quad 9 \quad 0 \quad 0$

Nasa = 59999900

3b) $.1011001100110011_2$

$1011001100110011 \times 2^{16}$

$\times 0000000000000111$

1011001100110011

1011001100110011

$+ 1011001100110011$

01001110011001100101

$4 \quad E \quad 6 \quad 6 \quad 5$

321,125

4b)

$4E6.6S_{16}$

$4 \times 16^{2} + E \times 16^{1} + 6 \times 16^{0} + ,6 \times 16^{-1} + 5 \times 16^{-2}$

1254.3945125_{10}

5b) $1.00111001110.0110101 \times 2^{10}$

127+10

0{10001001}00111001110011001137

4 4 9 C C CA0

0b

449CCCA0 = IEEE754

1c) 77.79 /16 = 4 r 13 4D.CA3D

13/16 = 0 r 13

.79 x16 = 12.64 (C)

.64 x16 = 10.24 (A)

.24 x16 = 3.84 (3)

.84 x16 = 13.44 (D)

$4D.CA3D_{16}$ 0100 1101 1100 1010 0011 1101$_2$

2 3 3 4 5 0 7 5

23345075_8

2c) 0 100 1101 1100 1010 0011 1101 x27

Nova = 0.100 1101 1100 1010 0011 1101 0000 0111

4 D C A 3 D 07

Nova = 4DCA3D07

3c) 0 1001 1011 1001 0100 0111 1010 $\times 2^{16}$

x 111

0100110111001010001111010

0100110111001010001111010

+0100110111001010001111010

0010001000010000111101011011 2

0 0 1 | 0 0 0 | 0 0 0 0 | 0 0 0 0 | 0 1 1 1 | 1 0 1 0 1 0 1 1 $\times 2^{16}$

2 2 0 8 7 A B

5c) 220.87 AB

136

0 | 1 0 0 | 0 1 0 0 | 0 0 0 0 | 1 0 0 0 | 0 0 1 0 | 0 0 0 1 |

4 4 0 8 2 1

127 + 9 = 136

1 1 1 0 | 1 0 1 0

E A

44082 1EA = IEEE 754