

Test answers

1. a) +31 into signed binary.

$$= 011111$$

$$\begin{aligned} \text{b) } 1A_{16} &= 1 \times 16^1 + A \times 16^0 \\ &= 26 \end{aligned}$$

$$\begin{aligned} \text{c) } 00100111 &\text{ in octal} \\ &= 047_8 \end{aligned}$$

$$\begin{aligned} \text{d) } 1101.101_2 &\text{ unsigned} \\ &= 13.625 \end{aligned}$$

$$\begin{aligned} \text{e) } 1000.101_2 &\text{ signed} \\ &= -8 + 0.5 + 0.125 \\ &= -7.375 \end{aligned}$$

2 Precision Smallest weight

a)	1	1
b)	1	1
c)	1	0
d)	0.125	0
e)	0.125	0

$$\text{Precision} = b^{-m}$$

$$\begin{aligned} \text{3 a) } 010.11 &+ 11100.01 \\ &= 010.11 \end{aligned}$$

$$\begin{array}{r} + 11100.01 \\ \hline 11111.00 \end{array} \quad \begin{array}{l} \text{no carry} \\ \text{no overflow} \end{array} \quad \text{Q 4.2}$$

$$\begin{aligned} \text{b) } 100.01 &+ 001001.10 \\ &= 111100.01 \end{aligned}$$

$$\begin{array}{r} + 001001.10 \\ \hline [1] 000101.11 \end{array} \quad \begin{array}{l} \text{carry} \\ \text{no overflow} \end{array} \quad \text{Q 5.2}$$

$$3c) 110001.11 - 10101.00$$

$$= \begin{array}{r} 110001.11 \\ - 10101.00 \\ \hline [1] 111100.11 \end{array}$$

carry (borrow)
no overflow
Q 5.2

$$3d) 01001.00 \times 10.1101$$

$$= -1 \times 01001.00 \times 01.0011$$

$$\begin{array}{r} 01001.00 \\ \times 01.0011 \\ \hline 0100100 \\ 01001000 \\ 00000000 \\ 00000000 \\ \hline 001001000000 \\ 001010101100 \end{array}$$

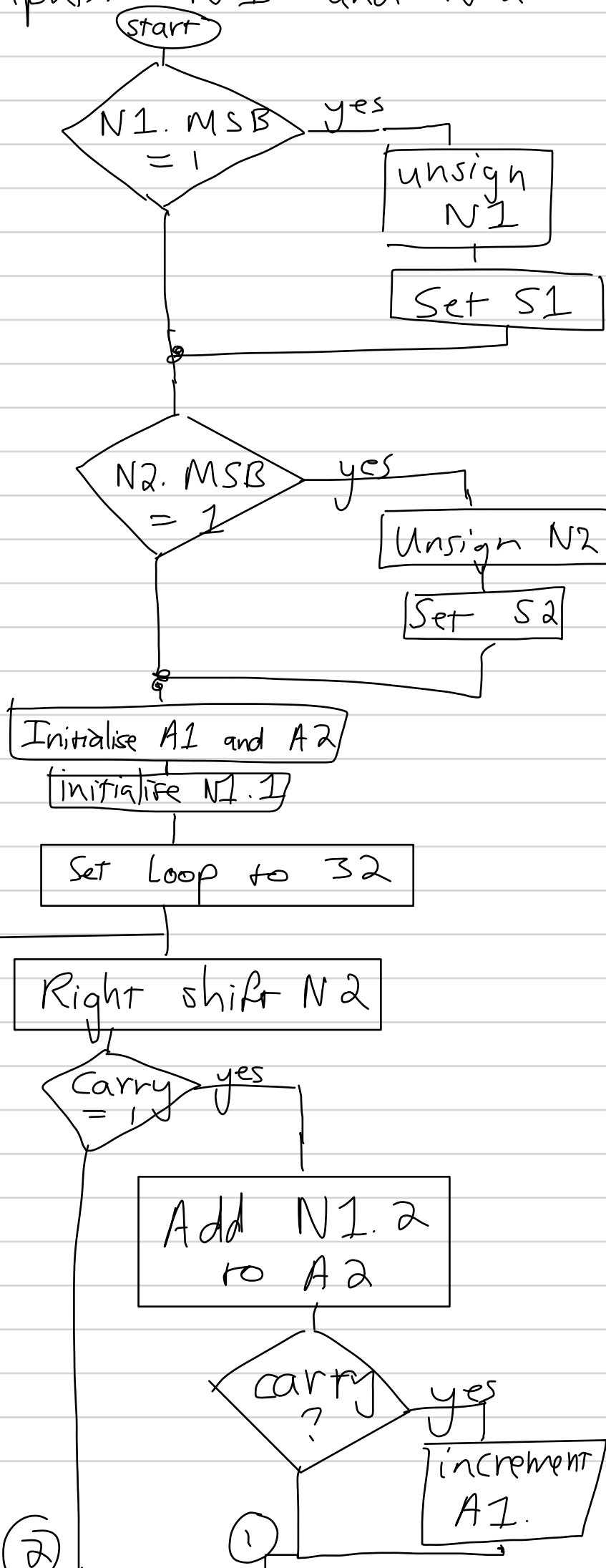
$$Q(4+1) \cdot (2+4) \\ = Q 5.6$$

Now resign

$$= \underline{110101.010100} \quad Q 5.6 \rightarrow$$

Question 2

Two inputs: N1 and N2.



3

2

1

