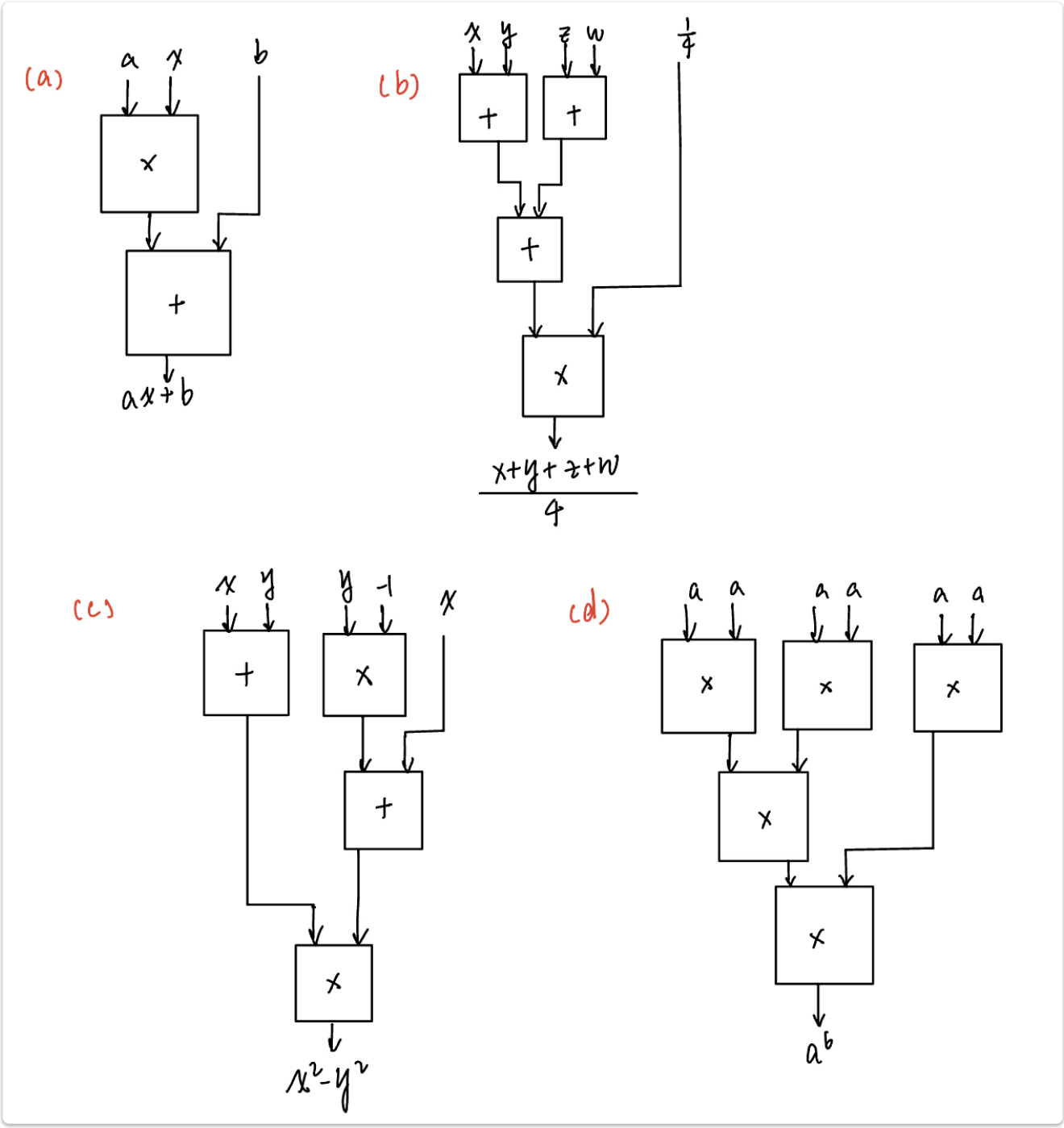
HW 1

T1



T2

1. a) $(98)_D = (01100010)_B$, 2's complement is: $(01100010)_B$
   b) $(-105)_D = (11101001)_B$, 2's complement is: $(10010111)_B$
2. c) $(01000010)_B = (1000010)_B = (66)_D$
   d) $(11101111)_B = -(00010001)_B = (-17)_D$

T3

a) $(01)+(110011)=(110100)_{补}=-(001100)_B=(-12)_D$
b) $(111)+(0100110)=(1111111)+(0100110)=(0100101)_{补}=(37)_D$
c) $(1010)+(1101)=(0111)$ 和的符号与被加相反，溢出。补位后正确结果为$(-9)_D$.
d) $(0001)+(1110)=(1111)_{补}=(-1)_D$

T4

a. (11101011)
b. (00011110)
c. (11100000)
d. (00000001)

T5

$(4.3)_D=(100.0100110011)_B=(1.000100110011*2^2)$
$2=129-127$
因而所求为：
0 10000001 00010011001100110011

T6

由条件知：$exponent=137$, $S=0$.
Considering the fact that $137-127=10$, it is easy to find out that:
$(11111100110.1001)_B=(2022.5625)_D$

T7

T7.

a.
```
  1010 0101
AND 1101 0101
-----------
  1000 0101
```

b.
```
  1000 1110
OR 1111 0101
-----------
  1111 1111
```

c. i.e.
```
  0000 1110
OR 1010 0101
-----------
  1010 1111
```

d.
```
  X1234
AND X5678
-----------
  0001 0010 0011 0100
AND 0101 0110 0111 1000
-----------------------
  0001 0010 0011 0000
-----------------------
  X1230
```

```
  XABCD
AND X99EF
---------
  1010 1011 1100 1101
AND 1001 1001 1110 1111
-----------------------
  1000 1001 1100 1101
-----------------------
  X89CD
```

```
  X1230
OR X89CD
--------
  0001 0010 0011 0000
OR 1000 1001 1100 1101
----------------------
  1001 1011 1111 1101
----------------------
  X9BFD
```

e.
```
  X6A12
XOR X3A15
---------
  0110 1010 0001 0010
XOR 0011 1010 0001 0101
-----------------------
  0101 0000 0000 0111
-----------------------
  X5007.
```

T8

A	B	C	A AND B	NOT C	Q_1
0	0	0	0	1	1
0	0	1	0	0	0
0	1	0	0	1	1
0	1	1	0	0	0
1	0	0	0	1	1
1	0	1	0	0	0
1	1	0	1	1	1
1	1	1	1	0	1

A	B	C	NOT A	NOT B	NOT(A) OR NOT(B)	Q_2
0	0	0	1	1	1	0
0	0	1	1	1	1	0
0	1	0	1	0	1	0
0	1	1	1	0	1	0
1	0	0	0	1	1	0
1	0	1	0	1	1	0
1	1	0	0	0	0	0
1	1	1	0	0	0	1

$Q_2 = A$ AND B AND C .

T9

(1) $\backslash t = 009 = (00001001)_B$
$\backslash n = 010 = (00001010)_B$
$\backslash r = 013 = (00001101)_B$
$\backslash t \backslash n \backslash r = 000010010000101000001101$
=>2 16 40 13
=>$CQoN$
(2) $MIME\ IRCu\ UTF-7$

T10

The largest positive number to be represented has the form:
0 11111111 11111111111111111111111
Suppose it is called N, then:
$N = (-1)^0 * (1.11111111111111111111111)_B * 2^{255-127} = (2^{24}-1)2^{105}$

T11

T11.