1. a) $(101101011101)_{2s}$

010010100010
$+1$

010010100011

$= (1187)_{10}$

$7 \,|\, 1187$
$7 \,|\, 169 - 4$
$7 \,|\, 24 - 1$
$7 \,|\, 3 - 3$
$0 - 3$

$= (3314)_7$ (Ans.)

b) $(00110010101)_{1s}$

$= +(405)_{10}$

$9 \,|\, 405$
$9 \,|\, 45 - 0$
$9 \,|\, 5 - 0$
$0 - 5$

$= +(500)_9$ (Ans.)

c) $(0011)_{BCD}$

8 4 2 1
0 0 1 1

$= (3)_{10}$

$5 \,|\, 3$
$0 - 3$

$= (3)_5$ (Ans.)

d) $(010010101011111)_{2s}$

$= +(9567)_{10}$ (Ans.)

e) $(1010101010000011)_{2s}$

$= 0101010101111100$
$+1$

0101010101111101

$= -(10941)_{10}$

f) $(0100101010111111)_{1S}$

$= +(9567)_{10}$

g) $(1010101010000011)_{1S}$

$= 0101010101111100$

$= -(10940)_{10}$

2. $(-6) - (+5)$ $= -6 + (-5)$

$6 = 00110$

$6 = 11001$

$+1$

$-6 = 11010$

$5 = 00101$

$= 11010$

$+1$

$-5 = 11011$

11010

$+\ 11011$

Carry $\leftarrow (1)10101$

10101

$= 01010$

$+1$

01011

$= -(11)_{10}$

NO, overflow. Because added two negative numbers. answer is also negative.

3. 1's $\rightarrow -\left[2^{13-1} - 1\right]$ to $\left[2^{13-1} - 1\right]$

$= -(4095)_{10}$ to $(4095)_{10}$

$= -(FFF)_{16}$ to $(FFF)_{16}$

largest number $= +(FFF)_{16}$

4. Sign & Magnitude →

$$-[2^{8-1}-1] \text{ to } [2^{8-1}-1]$$

$= -(127)_{10}$ to $(127)_{10}$

$= -(177)_8$ to $(177)_8$

Smallest number $-(177)_8$

5. $(43434134)_5 = 4\times5^7+3\times5^6+4\times5^5+3\times5^4+4\times5^3$
$+1\times5^2+3\times5^1+4\times5^0$

$= (374294)_{10}$

$= (1333026)_8$

$(164)_7 = 1\times7^2+6\times7^1+4\times7^0$

$= (95)_{10}$

$= (137)_8$

$137 \overline{)1333026 (7543}$

1231

1020

733

652

574

566

435

131

$137\times0=0$
$137\times1=137$
$137\times2=276$
$137\times3=435$
$137\times4=574$
$137\times5=733$
$137\times6=1072$
$137\times7=1231$

Quotient - 7543
Remainder - 131