

7 (a) A computer can perform logical and arithmetic shifts.

(i) Show the result of a logical left shift of 2 places on the two's complement binary integer 11001010

.....  
..... [1]

(ii) Show the result of an arithmetic right shift of 3 places on the two's complement binary integer 10011110

.....  
..... [1]

(b) Complete the following binary addition. Show your working. Include any overflow bit(s).

$$\begin{array}{r} 1\ 1\ 1\ 1\ 0\ 1\ 0\ 1 \\ +\ 1\ 0\ 1\ 1\ 0\ 0\ 0\ 1 \\ \hline \end{array}$$

[1]

(c) Subtract the binary number 00011110 from the binary number 01100100 using binary subtraction. Show your working.

[2]