

## **Theme 02: Number Systems**

## Worksheet 7- Binary Addition and Subtraction

Perform all calculations manually and include your working.

1.	For eacl	h question	add the	binary num	bers
----	----------	------------	---------	------------	------

- a.  $1_2 + 0_2$
- b.  $0_2 + 0_2$
- c.  $1_2 + 1_2$
- d.  $10_2 + 01_2$
- e. 11<sub>2</sub>+ 01<sub>2</sub>
- f.  $1101_2 + 11_2$
- 2. Assuming an 8 bit word length explain what problem can occur when adding 2 numbers together, each greater or equal to  $128_{10}$
- 3. For each question follow convert (A) and (B) to binary and subtract (A) from (B):
  - a. (A)  $10_{10}$  (B)  $15_{10}$
- word length of 8 bits
- b. (A) 68<sub>10</sub> (B) 69<sub>10</sub>
- word length of 8 bits
- c. (A)  $15_{10}$  (B)  $125_{10}$
- word length of 8 bits
- 4. For each answer to question 1, convert the binary back to decimal to check your answer.
- 5. Convert (A) and (B) to binary and subtract (A) from (B):
  - i. (A) 67<sub>10</sub> (B) 25<sub>10</sub>
- word length of 8 bits
- b. Convert your answer to decimal.Is it what you expected? If not, why not?