all elements is A must not be in B.

$$A \subseteq (A \oplus B)$$

$$\therefore A \cap B = \phi.$$

• A should not be empty.

7. Find the domain and range of these functions

a) the function that assigns to each pair of +ve integers the maximum of these two integers

and $f(a,b)$ = a if a > b
            = b if b > a.

So domain = +ve integers z^+ ✓

range = + ve integers z^+

b) The function that assigns to each positive integer -the number of the digits 0,1,2,3,4,5,6,7,8,9 that do not appear as decimal digits of the integer.

eg $f(5934.218)$
Decimal representation: 5, 9, 3, 4, 2, 1, 8.
Non appearing digits :- 0, 6, 7, 9   (4)
$f(5934218)$ = 4 ✓

eg $F(1234569)$
deci rep : 1, 2, 3, 4, 5, 6, 9
Non appearing digits :- (0, 7, 8)   (3).
$f(1234569)$ = 3 ✓

So domain = all +ve integers (z^+)

range = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

The function that assigns to a bit string the number of times the block 11 appears.

Since x is a bit string ⟹ 0 & 1.

Domain = {0, 1}

Range = {0, 1, 2, · · · · ·} non negative integers

Since $f(x)$ = no of times 11 repeats.

d) the function that assigns to a bit string the numerical position of the 1st 1 in the string and that assigns the value 0 to a bit string consisting of all 0s.

Since x is bit string. it only contains $(0,1)$

Domain $= \{0,1\}$.

Since Range is the position of the 1st 1.

Range $= \{0,1,2,3,\dots\}$ non negative integers.

8) find these values.

a) $\lfloor 1.1 \rfloor = 1$ ✓

b) $\lceil 1.1 \rceil = 2$ ✓

c) $\lfloor -0.1 \rfloor = -1$ ✓

d) $\lceil -0.1 \rceil = 0$ ✓

e) $\lceil 2.99 \rceil = 3$ ✓

f) $\lceil -2.999 \rceil = -2$ ✓

g. $\lfloor \frac{1}{2} + \lceil \frac{1}{2} \rceil \rfloor = \lfloor \frac{1}{2} + 1 \rfloor$

$= \lfloor 1.5 \rfloor$

$= \underline{1}$ ✓