2. NUMBERS AND SEQUENCES

Important Theorems' and Results:-

- The remainder is always less than the divisor.
- If $r = 0$ then $a = bq$ so b divides a.
- Similarly, if b divides a then $a = bq$
- The above lemma is nothing but a restatement of the long division process; the integer's q and r are called quotient and remainder respectively.
- When a positive integer is divided by 2 the remainder is either 0 or 1. So, any positive integer will of the form $2k$, $2k+1$ for some integer k.
- Euclid's Division algorithm will always produce remainder zero at some stage. Hence the algorithm should terminate.
- Euclid's Division Algorithm is a repeated application of Division Lemma until we get zero remainder.
- Highest Common Factor (HCF) of two positive numbers is denoted by (a,b).
- Highest Common Factor (HCF) is also called as Greatest Common Divisor (GCD).
- Two positive integers are said to be relatively prime or co prime if their Highest Common Factor is 1.

- If a prime number p divides ab then either p divides a or p divides b.

  That is p divides at least one of them.

- If a composite number n divides ab, then n neighter divide a nor b. For example, 6 divides 4×3 but 6 neither divide 4 nor 3.

- When a positive integer is divided by n, then the possible remainders are 0, 1, 2. . . n - 1.

- Thus, when we work with modulo n, we replace all the numbers by their remainders upon division by n, given by 0,1,2,3... n - 1.

- Two integers a and b are congruent modulo m, written as a b º(mod m), if they leave the same remainder when divided by m.

- While solving congruent equations, we get infinitely many solutions compared to finite number of solutions in solving a polynomial equation in Algebra.

- Though all the sequences are functions, not all the functions are sequences.