

1. Real Numbers.

- (A) Key concepts to revise:-
- 1) NCWCZCQCR
 - 2) Even, odd Nos. & Prime, Composite Nos.
 - 3) The Fundamental Theorem of Arithmetic
 - 4) If 'p' is a prime and 'p' divides a^n then 'p' divides 'a' where 'a' is +ve integer.
 - 5) For any two +ve integers 'a' and 'b', $HCF(a, b) \times LCM(a, b) = a \times b$
 - 6) $\sqrt{p}$ is irrational, where 'p' is a prime
 - 7) $\sqrt{2}, \sqrt{3}, \pi, \dots$ Irrational.

- (B)
- 1) "Every Composite Number can be expressed (factorised) as a product of primes" is known as Fundamental Theorem of Arithmetic.
 - 2) A composite number can be written as product of primes in a unique way.
 - 3) If 'p, q' are two consecutive natural numbers, then $HCF(p, q)$ is 1 (Co-prime)
 - 4) If 'n' is any natural number, then $(2 \times 5)^n$ ends with 0.
 - 5) HCF is always Factor of L.C.M.
 - 6) If 'a, b' are co-prime, then a^n, b^n are Co-prime.
 - 7) The L.C.M. & H.C.F. of two Rational Nos. are equal, then the Nos. must be equal.
(Extra imp note points)

- add
- (C)
- 1) $7 \times 11 \times 13 + 13 = 13(7 \times 11 + 1) = 13(77 + 1) = 13 \times 78$. Composite No.
 - 2) $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ is a Composite No. $\because 5(7 \times 6 \times 4 \times 3 \times 2 \times 1 + 1)$
 $5(1,008 + 1) = 5 \times 1009$
 - 3) $2.13113111311113 \dots$ is a nonterminating, repeating decimal number.
 - 4) If 'n' is a natural number, then $9^{2n} - 4^{2n}$ is always divisible by 5 & 13.
 - 5) If 'n' is a natural number, then $6^n - 5^n$ always ends with 1.
 $6^2 - 5^2 = 36 - 25 = 11$
 - 6) If the HCF of 65 and 117 is expressible in the form of $65m - 117$, then the value of 'm' is 2.
 - 7) If two integers 'a' & 'b' are written as
 $a = x^3 y^m$
 $b = x^2 y^4$
where 'x, y' are prime numbers, then
 $H.C.F.(a, b) = \underline{x^2 y^m}$

$$\begin{array}{r} 65 \overline{) 117} \quad 1 \\ \underline{65} \\ 52 \\ \underline{52} \\ 0 \end{array} \quad \begin{array}{r} 65 \overline{) 1} \\ \underline{65} \\ 0 \end{array}$$

$$65m - 117 = 13$$

$$65m = 130$$

$$m = 130/65$$

$$\therefore m = 2$$

- 8) The least no. that is divisible by all the nos. from 1 to 10 (both inclusive) is 2520
- $\because 1, 2, 3, 4, 5, 6, 7, 8, 9, 10$
- $$\begin{array}{r} 2 \overline{) 6, 7, 8, 9, 10} \\ \underline{3} \\ 3 \overline{) 3, 7, 4, 9, 5} \\ \underline{1} \\ 1, 7, 4, 3, 5 \end{array} \quad L.C.M. = 2 \times 3 \times 7 \times 4 \times 3 \times 5 = 42 \times 60 = 2520$$

- 9) HCF and LCM of 'a' and 'b' are 19 and 152 respectively. If 'a' = 38, then 'b' = 76
- $\because 19 \times 152 / 38 = 19 \times 4 = 76$

- *10) If $x = 2^3 \times 3^1 \times 5^2$ then HCF (xy) is 12
- $y = 2^2 \times 3^3$
- $\because 2^2 \times 3^1 = 4 \times 3 = 12$
- Least prime.
- $$\begin{array}{r} 108 \overline{) 600} \quad 5 \\ \underline{540} \\ 60 \\ \underline{60} \\ 0 \end{array} \quad \begin{array}{r} 108 \overline{) 1} \\ \underline{108} \\ 0 \end{array}$$