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(Affiliated to CBSE up to +2 Level)

CLASS: VIII

SUB.: MATHS

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Exponents and Powers

Question 1. Express the following numbers in standard form:

(i) 0.00000000000085

(ii) 0.000000000000942

(iii) 6020000000000000

(iv) 0.00000000837

(v) 31860000000

Solution:

(i) 0.00000000000085

$$= \frac{85}{10000000000000} = \frac{8.5 \times 10}{10^{13}}$$

$$= 8.5 \times 10^{1-13} = 8.5 \times 10^{-12}$$

Hence, the required standard form

$$= 8.5 \times 10^{-12}$$

(ii) 0.000000000000942

$$= \frac{942}{100000000000000}$$

$$= \frac{9.42 \times 100}{100000000000000} = \frac{9.42 \times 10^2}{10^{14}}$$

$$= 9.42 \times 10^{2-14} = 9.42 \times 10^{-12}$$

Hence, the required standard form

$$= 9.42 \times 10^{-12}$$

Question 2. Express the following numbers in usual form.

(i) 3.02×10^{-6}

(ii) 4.5×10^4

(iii) 3×10^{-8}

(iv) 1.0001×10^9

(v) 5.8×10^{12}

(vi) 3.61492×10^6

Solution:

(i) 3.02×10^{-6}

$$= 3.02 \times \frac{1}{10^6} = \frac{302}{100 \times 10^6}$$

$$= \frac{302}{10^2 \times 10^6} = \frac{302}{10^{2+6}} = \frac{302}{10^8}$$

$$= 302 \times 10^{-8}$$

$$= 0.00000302$$

Hence, $3.02 \times 10^{-6} = 0.00000302$

(ii) 4.5×10^4

$$= \frac{45}{10} \times 10^4 = 45 \times 10^{4-1}$$

$$= 45 \times 10^3 = 45000$$

Hence, $4.5 \times 10^4 = 45000$