

Unit 2 Logarithms

Standard form

234, 0.21

Scientific Notation

234 = 234

$$2.34 \times 10^2$$

43710

$$4.3710 \times 10^4$$

$$4.371 \times 10^4$$

Exercise 2.1

1:- Write the following in Scientific Notation.

(i) 0.00053407

PKNOTES.ORG

$$= 5.3407 \times 10^{-4}$$

(ii) 53400000

$$= 5.3400000 \times 10^7$$

$$= 5.34 \times 10^7$$

(iii) 0.0000000000012

$$= 1.2 \times 10^{-11}$$

(iv) 2.5326

$$= 2.5326 \times 10^0$$

Question No 2:-

Write the following in Standard Notation.

(i) 9.067×10^{-5}

$$= 0.00009067$$

$$(ii) 5.64 \times 10^0$$

$$= 5.64 \times 1$$

$$= 5.64$$

$$(iii) 6.53 \times 10^{-6}$$

$$= 0.00000653$$

$$(iv) 3.1415 \times 10^9$$

$$= 3141500000$$

Question Number 3:-

Simplify the following by converting into the form indicated

$$(i) 563.71 \times 10^{-3} \times 2.54 \times 10^4 \rightarrow S.N.$$

$$= 563.71 \times 2.54 \times 10^{-3} \times 10^4$$

$$= 1431.8234 \times 10^{-3+4}$$

$$= 1431.8234 \times 10^1$$

$$= 1.4318234 \times 10^3 \times 10^1$$

$$= 1.4318234 \times 10^{3+1}$$

$$= 14318234 \times 10^4$$

$$(ii) \frac{0.023 \times 10^5}{10^{-3}} \longrightarrow \text{Standard form}$$

$$= 0.023 \times 10^5 \times 10^3$$

$$= 0.023 \times 10^{5+3}$$

$$= 0.023 \times 10^8$$

$$= 2300000$$

$$(iii) \frac{2.549 \times 5067 \times 10^{-3}}{10^3} \rightarrow \text{S.N.}$$

$$= 2.549 \times 5067 \times 10^{-3} \times 10^{-3}$$

$$= 12915.783 \times 10^{-3-3}$$

$$= 12915.783 \times 10^{-6}$$

$$= 1.2915783 \times 10^4 \times 10^{-6}$$

$$= 1.2915783 \times 10^{4-6}$$

$$= 1.2915783 \times 10^{-2}$$

$$(iv) 0.0009988 \times 10^{10} \text{ (Standard form)}$$

$$= 9988000$$

Question No 4:-

If it takes 5 seconds to recite "kalma Pak" once. How many hours will it take to recite "kalma Pak" one million time? Convert Hours into days and write the answer in standard form. Round of the answer discarding the decimal part.

$$\text{Time to recite Kalma Once} = 5 \text{ sec.}$$

$$\begin{aligned} \text{Time to recite Kalma one million time} &= \\ &= 1,000,000 \times 5 \\ &= 5,000,000 \text{ sec} \end{aligned}$$

$$\begin{aligned} \text{Seconds to hour} &= \frac{5,000,000}{60 \times 60} \\ &= 1388.88 \text{ hr} \end{aligned}$$

$$\text{hour to days} = \frac{1388.88}{24}$$

$$\begin{aligned} &= 57.87 \text{ days} \\ \text{Rounding off} &\leftarrow \\ &= 58 \text{ days} \end{aligned}$$

Question No 5

Distance between Earth and Sun is 9.3225600×10^7 miles. If speed of light is approximately $1.86,000 \times 10^5$ miles per second. How long does it take for light to reach the Earth. Convert the answer in minutes writing in standard form.

$$\text{Distance} = 9.3225600 \times 10^7$$

$$\text{Speed} = 1.86,000 \times 10^5$$

$$\text{Time} = ?$$

$$S = vt$$

$$\frac{S}{v} = t$$

$$\frac{9.3225600 \times 10^7}{1.86,000 \times 10^5} = t$$

$$\frac{93225600}{186000} = t$$

$$501.2 \text{ Sec} = t$$

$$\frac{501.2}{60} = t$$

$$8.35 \text{ min} = t$$

$$t = 8.35 \text{ min}$$