

Exercise 2.3

Q. 1 Find characteristic of the following numbers:

(i) 5287

Solution:

Number of digits before decimal place = 4

Characteristic = $4 - 1 = 3$

(ii) 59.28

Solution:

5028

No of digits before decimal place 2

Characteristic = $2 - 1 = 1$

(iii) 0.0567

Solution:

No. of zeros between decimal point and 1st non-zero digit = 1

Characteristic = $-1 - 1 = -2$ or $\bar{2}$.

(iv) 234.7

Solution:

234.7

No. of digits before decimal point = 3

Characteristic = $3 - 1 = 2$

(v) 0.000049

Solution:

0.000049

No. of zeros between decimal point and 1st non-zero digit = 4

Characteristic = $-4 - 1 = -5$.

(vi) 145000

Solution :

145000

No of digits before decimal point 6

Characteristic $6 - 1 = 5$

Q.2 Find logarithm of the following numbers :

(i) 43
Solution :

$\log 43$

Characteristic = $2 - 1 = 1$

Mantissa = .6335

Ans. 1.6335

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(ii) 579

Solution :

$\log 579$

$$(\text{baracteristic} = 3 - 1 = 2)$$

$$\text{Manissa} = .7627$$

$$\log 579 = 2 + .7627$$

$$\log 579 = 2.7627$$

(iii) 1.982

Solution :

$\log 1.982$

$$\text{Characteristic} = 1 - 1 = 0$$

$$\text{Mantisay} = .2971$$

$$\log 1.982 = 0 + .2971$$

$$\log 1.982 = 0.2971$$

(iv) 0.0876

Solution :

$\log 0.0876$

$$\text{Characteristic} = -(1 + 1) = -2 \text{ or } \bar{2}$$

$$\text{Mantissa} = .9425$$

$$\log 0.876 = \bar{2} + .9425$$

$$\log 0.0876 = \bar{2}.9425$$

(v) 0.047

Solution :

$\log 0.047$

$$\text{Characteristic} = -(1 + 1) = -2 \text{ or } \bar{2}$$

$$\text{Mantissa} = .6721$$

$$\log 0.876 = 2 + .6721$$

$$\log 0.0876 = 2.6721$$

(vi) 0.000354

Solution :

$\log 0.000354$

$$\text{Characteristic} = (-3 - 1) = -4$$

$$\text{Mantissa} = .5490$$

$$\log 0.000354 = -4 + .5490$$

$$\log 0.0003154 = -3.451$$

Q-3 If $\log 3.177 = 0.5019$, then find:

(i) $\log 3177$

Solution:

$$\text{Characteristics} = 3$$

$$\text{Mantissa} = .5019$$

$$\log 3177 = 3 + .5019 = 3.5019$$

(ii) $\log 31.77$

Solution: *Characteristics* $2 - 1 = 1$

$$\text{Mantissa} = .5019 \quad \log 31.77 = 1.5019$$

(iii) $\log 0.03177$

Solution:

$$\text{Characteristics} = -1 - 1 = -2 \text{ or } \bar{2}$$

$$\text{Mantissa} = .5019 = \log 0.03177 = \bar{2}.5019$$

Q. 4 Find the value of x .

(i) $\log x = 0.0065$

Solution:

$$\log x = 0.0065$$

$$\text{characteristic} = 0$$

$$\text{Mantissa} = .0065$$

$$x = \text{antilog} (0.0065)$$

$$r = 1.015$$

(ii) $\log x = 1.192$

Solution:

$$\log x = 1.192$$

$$\text{Characteristics} = 1$$

$$\text{Mantissa} = .192$$

$$= \text{antilog} (1.192)$$

$$= 1.556 = 15.56$$

iii) $\log x = -3.434$

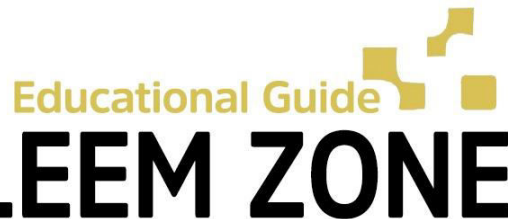
Solution:

$$\text{Log} x = -3.434$$

To make mantissa positive add and subtract 4 .

$$\log x = -4 + 4 - 3.434$$

$$\log x = -4 + .566 = \bar{4}.566$$



Mantissa = .566
 $x = \text{antilog } (\bar{4}.566)$
 $x = 15.56$
 $x = 0.000368$
 (iv) $\log x = -1.5726$

Solution:
 -1.5726
 To make mantissa positive add and subtract 2
 $\log a = -2 + 2 - 1.5726$
 $\log x = -2 + .4274$
 Characteristics = -2
 Mantissa = .4274
 $x = \text{antilog } \bar{2} . 4274$

$x = 0.02676$
 (v) $\log x = 4.3561$

Solution:
 $\log x = 4.3561$
 Characteristic = 4
 Mantissa = .3561
 $x = \text{antilog}(4.3561) = 22710$
 (vi) $\log x = -2.0184$

Solution:
 $\log x = -2.0184$
 To make mantissa positive add and subtract 3
 $\log x = -3 + 3 - 2.0184$
 $= -3 + .9816$
 $x = \text{antilog}(\bar{3}.9816)$
 $x = 0.009585$

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