

Exercise 2.3

Q.1 Find characteristic of the following numbers:

(i) 5287

Solution:

5287

Number of digits before decimal place = 4

Characteristic = $4-1 = 3$

(ii) 59.28

Solution:

59.28

No of digits before decimal place = 2

Characteristic = $2-1 = 1$

(iii) 0.0567

Solution:

0.0567

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

Characteristic = $-(1+1) = -2$ or 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 = $-(4+1) = -5$ or 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

$\log 43 = 1 + .6335$

$\log 43 = 1.6335$

(ii) 579

Solution:

$\log 579$

Characteristic = $3-1 = 2$

Mantissa = .7627

$\log 579 = 2 + .7627$

$\log 579 = 2.7627$

(iii) 1.982

Solution:

$\log 1.982$

Characteristic = $1-1 = 0$

Mantissa = .2971

$\log 1.982 = 0 + .2971$

$\log 1.982 = 0.2971$

(iv) 0.0876

Solution:

$\log 0.0876$

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

Mantissa = .9425

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

$\log 0.0876 = \underline{2} + .9425$

(v) 0.047

Solution:

$\log 0.047$

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

Mantissa = .6721

$\log 0.876 = \underline{2} + .6721$

$\log 0.0876 = \underline{2} + .6721$

(vi) 0.000354

Solution:

$\log 0.000354$

Characteristic = $-(3+1) = -4$ or $\underline{4}$

Mantissa = .5490

$\log 0.000354 = \underline{4} + .5490$

$\log 0.000354 = \underline{4} + .5490$

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

(i) $\log 3177$

Solution:

Characteristics = $4-1 = 3$

Mantissa = .5019

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

(ii) $\log 31.77$

Solution:

Characteristics = $2-1 = 1$

Mantissa = .5019

$\log 31.77 = 1 + .5019 = 1.5019$

(iii) $\log 0.03177$

Solution:

Characteristics = $-(1+1) = -2$ or $\underline{2}$

Mantissa = .5019

$\log 0.03177 = \underline{2} + .5019$

$= \underline{2} + .5019$

Q.4 Find the value of x.

(i) $\log x = 0.0065$

Solution:

$\log x = 0.0065$

characteristic = 0

Mantissa = .0065

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

$x = 1.015$

(ii) $\log x = 1.192$

Solution:

$\log x = 1.192$

Characteristics = 1

Mantissa = .192

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

$x = 1 \wedge 5.56 = 15.56$

(iii) $\log x = -3.434$

Solution:

$\log x = -3.434$

To make mantissa positive add and subtract 4.

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

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

Characteristics = $\underline{4}$ or -4

Mantissa = .566

$x = \text{antilog}(\underline{4}.566)$

$x = 1 \wedge 5.56 = 15.56$

$x = 0.0003 \wedge 681$

$x = 0.0003681$

(iv) $\log x = -1.5726$

Solution:

-1.5726

To make mantissa positive add and subtract 2.

$\log x = -2 + 2 - 1.5726$

$\log x = -2 + .4274$

$\log x = \underline{2}.4274$

Characteristics = 2 or -2

Mantissa = .4274

$x = \text{antilog}(\underline{2}.4274)$

$x = \text{antilog}(\underline{2}.4274)$

Table value

$2673+3=2676$

$x = 0.02 \wedge 676$

$x = 0.02676$

(v) $\log x = 4.3561$

Solution:

$\log x = 4.3561$

Characteristic = 4

Mantissa = .3561

$x = \text{antilog}(4.3561) = 2 \blacksquare 2710 = 22710$

(vi) $\log x = -2.0184$

Solution:

$\log x = -2.0184$

To make mantissa positive add and subtract 3.

$\log x = -3 + 3 - 2.0184$

$= \underline{3} + .9816$

$x = \text{antilog}(\underline{3}.9816)$

$x = 0.009585$