EXERCISE # 2.3

Q#1: Find characteristics of the following numbers:

(i) 5287

Solution:

Charateristic $= 3$

(ii) 59.28

Solution:

Charateristic $= 1$

(iii) 0.0567

Solution:

Charateristic $= -2$

(iv) 234.7

Solution:

Charateristic $= 2$

(v) 0.000049

Solution:

Charateristic $= -5$

(vi) 145000

Solution:

Charateristic $= 5$

Q#2: Find the logarithm of the following numbers:

(i) 43

Solution:

Charateristic $= 1$

$\text{Mantissa} = 0.6335$

$\log 43 = \text{character}.. + \text{mantissa}$

$\log 43 = 1 + 0.6335$

$\boxed{\log 43 = 1.6335}$

(ii) 579

Solution:

$\text{Charateristic} = 2$

$\text{Mantissa} = 0.7627$

$\log 579 = 2 + 0.7627$

$\boxed{\log 579 = 2.7627}$

(iii) 1.982

Solution:

$\text{Charateristic} = 0$

$\text{Mantissa} = 0.2971\ (2967 + 4 = 2971)$

$\log 1.982 = 0 + 0.2971$

$\boxed{\log 1.982 = 0.2971}$

(iv) 0.0876

Solution:

$\text{Charateristic} = -2$

$\text{Mantissa} = 0.9425$

$\log 0.0876 = -2 + 0.9425$

$\boxed{\log 0.0876 = -1.0575}$

(v) 0.047

Solution:

$\text{Charateristic} = -2$

$\text{Mantissa} = 0.6721$

$\log 0.047 = -2 + 0.6721$

$\boxed{\log 0.047 = -1.3279}$

(vi) 0.000354

Solution:

$\text{Charateristic} = -4$

$\text{Mantissa} = 0.5490$

$\log 0.000354 = -4 + 0.5490$

$\boxed{\log 0.000354 = -3.451}$

Q#3: If log 3.177 = 0.5019, then find:

(i) log 3177

Solution:

$= \log 3177$

$\text{Charateristic} = 3$

$\text{Mantissa} = 0.5019$

$\log 3177 = 3 + 0.5019$

$\boxed{\log 3177 = 3.5019}$

(ii) log 31.77

Solution:

$= \log 31.77$

$\text{Charateristic} = 1$

$\text{Mantissa} = 0.5019$

$\log 31.77 = 1 + 0.5019$

$\boxed{\log 31.77 = 1.5019}$

(iii) log 0.03177

Solution:

$= \log 0.03177$

$\text{Charateristic} = -2$

$\text{Mantissa} = 0.5019$

$\log 0.03177 = -2 + 0.5019$

$\boxed{\log 3177 = -1.4981}$

Q#4: Find the value of x:

(i) $\log x = 0.0065$

Solution:

$\log x = 0.0065$

Table value $= 1014 + 1 = 1015$

$x = \text{anti}\log 0.0065$

$\boxed{x = 1.015}$

(ii) $\log x = 1.192$

Solution:

$\log x = 1.192$

Table value $= 1556$

$x = \text{antilog } 1.192$

$\boxed{x = 15.56}$

(iii) $\log x = -3.434$

Solution:

$\log x = -3.434$

Since mantissa is negative, we will make it positive by adding and subtracting 4

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

$\log x = -4 + 0.566$

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

Table value $= 3681$

$x = \text{antilog } \bar{4}.566$

$\boxed{x = 0.0003681}$

(iv) $\log x = -1.5726$

Solution:

$\log x = -1.5726$

Since mantissa is negative, we will make it positive by adding and subtracting 2

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

$= -2 + 0.4274$

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

Table value $= 2673 + 2 = 2675$

$x = \text{antilog } \bar{2}.4274$

$\boxed{x = 0.02675}$

(v) $\log x = 4.3561$

Solution:

$\log x = 4.3561$

Table value $= 2270 + 1 = 2271$

$x = \text{antilog } 4.3561$

$\boxed{x = 2271}$

(vi) $\log x = -2.0184$

Solution:

$\log x = -2.0184$

Since mantissa is negative, we will make it positive by adding and subtracting 3

$= -3 + 3 - 2.0184$

$= -3 + 0.9816$

$\log x = \bar{3}.9816$

Table value $= 9572 + 13 = 9585$

$x = \text{antilog } \bar{3}.9816$

$\boxed{x = 0.009585}$