Sol

Error :- difference between True Value and measured Value

Accuracy :- is a degree of closeness with The instrument reading approaches The True Value of The Variable under measurement

precision :- is a measure of The reproducibility of The measurement

2)

absolute error :-

$\varepsilon = |Y - X|$

$\varepsilon = |1,5 - 1,46| = 0,04$

percentage :-

$\%\varepsilon = |\varepsilon / Y| \times 100 = \frac{1,5 - 0,04}{1,5} \times 100 = 97,3$

3)

relative accuracy :- $1 - \frac{2 - 1,93}{} = 0,965$

percentage accuracy :- $100 - \%\varepsilon = 100 - 3,5 = 96,5$

4) precision of reading $29.9 = 1 - \frac{29.9 - 30,15}{30,15} = 1,00$

5)

$\bar{x} = 20,016$

The precise $20,20 = 1 - \left|\frac{x_n - \bar{x}}{\bar{x}}\right| = 1 - \left|\frac{20,20 - 20,016}{20,20}\right| = 0,99$

The precise $19,90 = 1 - \left|\frac{19,90 - 20,016}{20,016}\right| \simeq 1,008$

The precise $20,05 = 1 - \left|\frac{20,05 - 20,016}{20,016}\right| = 0,998$

The precise $20,10 = 1 - \left|\frac{20,10 - 20,016}{20,016}\right| \simeq 0,996$

The precise $19,85 = 1 - \left|\frac{19,85 - 20,016}{20,016}\right| = 1,008$

The precise $20,00 = 1 - \left|\frac{20,00 - 20,016}{20,016}\right| = 1$

b) $\bar{x} = 2,193$

a) pricision of each measurment

1) $= 1 - \left|\frac{x_n - \bar{x}}{\bar{x}}\right| = 0,99$

2) $= 1,00$

3) $0,99$

4) $0,99$

5) $1,010$

6) $1,00$

7)

a) absolut error = 300 - 175 = 125

limiting erro = 0,9 x 125 = 122,5