True Discount

IMPORTANT CONCEPTS

Suppose a man has to pay Rs. 156 after 4 years and the rate of interest is 14% per annum. Clearly, Rs. 100 at 14% will amount to Rs. 156 in 4 years. So, the payment of Rs. now will clear off the debt of Rs. 156 due 4 years hence. We say that:

Sum due = Rs. 156 due 4 years hence;

Present Worth (P.W.) = Rs. 100;

True Discount (T.D.) = Rs. (156 - 100) = Rs. 56 = (Sum due) - (P.W.)

We define: **T.D. = Interest on P.W.; Amount = (P.W.) + (T.D.)**

Interest is reckoned on P.W. and true discount is reckoned on the amount.

IMPORTANT FORMULAE

Let rate = R% per annum and Time = T years. Then,

1. **P.W. = \( \frac{100 \times \text{Amount}}{100 + (R \times T)} \) = \( \frac{100 \times \text{T.D.}}{R \times T} \)**

2. **T.D. = \( \frac{(P.W.) \times R \times T}{100} \) = \( \frac{\text{Amount} \times R \times T}{100 + (R \times T)} \)**

3. **Sum = \( \frac{(S.I.) \times (T.D.)}{(S.I.) - (T.D.)} \)**

4. **(S.I.) - (T.D.) = S.I. on T.D.**

5. When the sum is put at compound interest, then **P.W. = \( \frac{\text{Amount}}{(1 + \frac{R}{100})^T} \)**