BANKERS DISCOUNT

If a merchant/ person X buys goods of Rs. 10,000 from another merchant/ person Y at credit of say 5 months. B prepares a bill/bill of exchange. A signs in that bill and allows B to withdraw the amount from his bank account after exactly 5 months. The date exactly after 5 months is called nominally due date. Grace days / 3 days (known as grace days) are added to it get a date, known as **legally due date.**

If Y wants to have the money before the legally due date can taken the money from the banker / a broker who deducts Simple interest on the face value (i.e., Rs. 10,000 in this case) for the period from the date on which the bill was discounted (i.e., paid by the banker) and the legally due date. This amount is known as **Banker's Discount (B.D).** B.D. is the S.I. on the face value for the period from the date on which the bill was discounted and the legally due date.

Banker's Gain (B.G) = B.D. - T.D (expiry time.)

Formulas

1. B.D. = S.I. on bill for unexpired time.
2. B.G. = B.D – T.D = S.I on T.D. = $(T.D.)^2$ / p.w.
3. B.D. = (Amount * rate * Time) / 100
4. T.D. = (Amount * rate * Time) / [100 + (Rate * Time)]
5. Amount = (B.D. * T.D) / (B.D. – T.D)
6. T.D. = (B.G * 100) / (Rate * Time)

Problems with solutions

1. The banker's discount on Rs. 1600 at 15% per annum is the same as true discount on Rs. 1680 for the same time and at the same rate. The time is:

Solution

S.I. on Rs. 1600 = T.D. on Rs. 1680.

Rs. 1600 is the P.W. of Rs. 1680, i.e., Rs. 80 is on Rs. 1600 at 15%.

$$\text{Time} = \left(\frac{100 \times 80}{1600 \times 15}\right)\text{year} = \frac{1}{3} \text{ year} = 4 \text{ months.}$$

2. The banker's gain of a certain sum due 2 years hence at 10% per annum is Rs. 24. The present worth is:

Solution

$$\text{T.D.} = \left(\frac{\text{B.G.} \times 100}{\text{Rate} \times \text{Time}}\right) = \text{Rs.} \left(\frac{24 \times 100}{10 \times 2}\right) = \text{Rs. } 120.$$

$$\text{P.W.} = \frac{100 \times \text{T.D.}}{\text{Rate} \times \text{Time}} = \text{Rs.} \left(\frac{100 \times 120}{10 \times 2}\right) = \text{Rs. } 600.$$

3. The banker's gain on a sum due 3 years hence at 12% per annum is Rs. 270. The banker's discount is:

Solution

$$\text{T.D.} = \left(\frac{\text{B.G.} \times 100}{\text{R} \times \text{T}}\right) = \text{Rs.} \left(\frac{270 \times 100}{12 \times 3}\right) = \text{Rs. } 750.$$

$\therefore$ B.D. = Rs.(750 + 270) = Rs. 1020.

4. The certain worth of a certain sum due sometime hence is Rs. 1600 and the true discount is Rs. 160. The banker's gain is:

Solution

$$\text{B.G.} = \frac{(\text{T.D.})^2}{\text{P.W.}} = \text{Rs.} \left(\frac{160 \times 160}{1600}\right) = \text{Rs. } 16.$$

5. The banker's gain on a bill due 1 year hence at 12% per annum is Rs. 6. The true discount is:

Solution

$$\text{T.D.} = \frac{\text{B.G.} \times 100}{\text{R} \times \text{T}} = \text{Rs.} \left(\frac{6 \times 100}{12 \times 1}\right) = \text{Rs. } 50.$$