1 Commission, Brokerage and Discount

Let's Study

- Commission, Brokerage
- Discount

Let's Discuss…

1.1 Commission and Brokerage Agent: When transactions like sale, purchase, auction etc. are done through some middlemen, such middlemen are called agents.

(The charges paid to an agent for doing the work on behalf of some other person, called principal, is called commission.)

Principal: Principal refers to an individual party or parties participating in a transaction.

Commission: The charges paid to an agent for doing the work on behalf of principal is called commission. The commission or the remuneration paid to an agent is generally fixed as some percentage of the value of the transaction. For example, suppose an agent charges commission at 5% on the sales. Then in the transaction of Rs.15,000/-, the agent will get a commission of Rs.750 as follows.

$$\text{Rs. } 15000 \times \frac{5}{100} = \text{Rs. } 750/-$$

Following are different types of agents named according to their specialization.

Commission Agents: A commission agent is a person who buys or sells goods on behalf of his principal and gets commission for his service.

Broker: A broker is an agent who brings together the buyer and the seller for the purpose of purchase or sale. This commission is called brokerage and is charged to both the parties.

Auctioneer: An auctioneer is an agent who sells goods by auction. He sells goods to the highest bidder. Many a time name of the principal is not disclosed in the transaction.

Factor: A factor is an agent who is given the possession of goods and enters a contract for sale in his/her own name.

Del Credere Agent: A del credere agent gives guarantee to his principal that the party to whom he/she sells the goods will pay the sale price of goods. If a buyer is unable to pay after the transaction is completed, a del credere agent is liable for the payment.

Agent gets additional commission other than the usual commission for this. This is known as delcredere commission.

SOLVED EXAMPLES

Ex.1: A merchant gives his agent 5% ordinary commission plus 2% del credere commission on sale of goods, worth Rs.55,000/-. How much does the agent receive? How much does the merchant receive?

Solution:

Agent's Commission at 5% $= 55000 \times \frac{5}{100}$

$= \text{Rs.}2750$

Rate of delcredere $= 2\%$

Amount of delcredere $= 55000 \times \frac{2}{100}$

$= \text{Rs.}1100$

$\therefore$ Agent's Total Commission $= 2750 + 1100$

$= \text{Rs.}3850$

Merchant receives $= 55000 - 3850$

$= \text{Rs.}51150$

Ex.2: The price of a refrigerator is Rs.47,000. An agent charges commission at 6% and earns Rs.42,300. Find the number of refrigerators.

Solution: The price of a refrigerator = Rs.47000/-

Rate of commission = 6%

Commission for one refrigerator

$$= 47000 \times \frac{6}{100}$$

$$= \text{Rs. } 2820$$

Total Commission earned = Rs. 42300 (given)

$\therefore$ Number of total refrigerators sold

$$= \frac{\text{Total Commission}}{\text{Commission per refrigerator}}$$

$$= \frac{42300}{2820}$$

$$= 15$$

$\therefore$ 15 refrigerators were sold.

Ex.3: A house was sold through an agent for Rs.60 lakh. He charged 1% Commission from both buyer and seller. Calculate agent's commission. Calculate the net amount received by the seller and amount paid by the buyer.

Solution: Selling price of the house = Rs. 60 lakh.

Commission on the sale of the house

$$= 60 \times \frac{1}{100}$$

$$= \text{Rs.0.60 lakh from each party.}$$

$\therefore$ Agents Commission is Rs.1.20 lakh from both the parties.

$\therefore$ Price of the house paid by the buyer

$$= \text{Rs. 60 lakh} + \text{Rs. 0.60}$$

$$= \text{Rs. 60.60 lakh}$$

Net amount received by the seller

$$= 60 - 0.60$$

$$= \text{Rs. 59.4 lakh}$$

$$= \text{Rs. 59,40,000}$$

Ex.4: A sales representative gets fixed monthly salary plus commission based on the sales. In two successive months he received Rs.23,500 and Rs.24,250 on the sale of Rs.70,000 and Rs.85,000 respectively. Find his monthly salary and the rate of commission on sales.

Solution: Income of sales representative

= Salary + Commission on the sales

23500 = Salary+Commission on Rs.70,000 ...(1)

24250 = Salary+Commission on Rs.85,000 ...(2)

subtracting (1) from (2) we get

750 = commission on 15,000

$$\text{Rate of Commission} = \frac{100 \times 750}{15000}$$

$$= 5$$

$\therefore$ Rate of Commission = 5%

$\therefore$ Commission on Rs.70000 $= 70000 \times \frac{5}{100}$

$= 3500$

Substituting in equation (1), we get

23500 = Salary + 3500

$\therefore$ Salary = 23500 − 3500

= Rs. 20000

Ex.5: The income of an agent remain unchanged though the rate of commission is increased from 5% to 6.25%. Find the percentage reduction in the value of business.

Solution: Let the initial value of the business be Rs.100

$\therefore$ Original income of the agent = Rs.5

Let the new value of the business be Rs.x

$\therefore$ New income of the agent $= x \times \frac{6.25}{100}$

$$= \frac{x}{100} \times \frac{625}{100}$$

$$= \frac{x}{16}$$

Now Original income = new income (given)

$\therefore \quad 5 = \frac{x}{16}$

$\therefore \quad x = 80$

$\therefore$ New value of the business = Rs. 80

$\therefore$ There is 20% reduction in the value of the business.

Ex.6: A salesman receives 8% commission on the total sales. If his sales exceeds Rs. 20,000 he receives an additional commission at 2% on the sales over Rs. 20,000/-. If he receives Rs. 7,600 as commission, find his total sales.

Solution: Let the total sales be Rs. x.

$\therefore$ Commission at 8% on total sales

$= x \times \frac{8}{100}$

$= \frac{8x}{100}$

Sales exceeding Rs.20000 $= x - 20000$

$\therefore$ Commission at 2% on excess sales

$= (x - 20000) \times \frac{2}{100}$

But total commission earned = Rs.7,600

$\therefore \quad \frac{8x}{100} + \frac{2(x-20000)}{100} = 7{,}600$

$\therefore \quad 8x + 2x - 40000 = 7600 \times 100$

$\therefore \quad 10x = 800000$

$\therefore \quad x = 80000$

$\therefore$ His total sales is Rs.80,000

Trade Discount and Cash Discount

Discount is the reduction in the price of an article, allowed by the seller to the purchaser. It is generally expressed in terms of percentage.

There are two types of Discounts :

1) **Trade discount:** Trade discount is allowed by one trader to another. It is given on the catalogue price, list price or market price of the goods.

2) **Cash discount:** Cash discount is allowed in consideration of ready cash payment.

The buyer may be allowed both of these discounts. In such a case the trade discount is first calculated on the catalogue (list) price. The cash discount is then calculated on the price obtained after deducting the trade discount from the list price.

Invoice price = List price (Catalogue price) – Trade discount.

Selling Price / Net Selling Price = Invoice price – Cash discount

Profit = Net selling price – Cost price

Loss = Cost price – Net selling price

SOLVED EXAMPLES

M/s. Saket Electronics is given 15% trade discount and 5% cash discount on purchase of television sets by the distributor. Find the total discount availed if M/s. Saket Electronics purchases TV sets worth Rs. 12,00,000 from the distributor.

Solution: Discount at 15% on Rs 12,00,000

$= 1200000 \times \frac{15}{100}$

= Rs.1,80,000

$\therefore$ Invoice price of T.V. Sets

= 12,00,000 − 1,80,000

= Rs.10,20,000

Now cash discount is given on Rs.10,20,000

Cash discount at 5% on Rs.10,20,000

$= 10{,}20{,}000 \times \frac{5}{100}$

= Rs.51,000

$\therefore$ Total discount availed = 1,80,000 + 51,000

= Rs.2,31,000

Ex.8: Vaishnavi wants to buy an i-phone worth Rs 55,000. A shopkeeper gives 8% trade discount and 8% cash discount. Another shopkeeper gives 10% trade discount and 5% cash discount. Which shopkeeper should be preferable?

Solution: The first shopkeeper gives

$$8\% \text{ on Rs.55000} = 55000 \times \frac{8}{100}$$

$$= \text{Rs.4400}$$

$\therefore$ Invoice price of the i-phone $= 55000 - 4400$

$$= 50{,}600$$

Cash discount at 8% on Rs.50,600

$$= 50600 \times \frac{8}{100}$$

$$= \text{Rs. } 4048$$

Net amount payable to the first shopkeeper

$$= 50600 - 4048$$

$$= \text{Rs.46552}$$

Second shopkeeper gives 10% discount on

$$\text{Rs.55000} = 55000 \times \frac{10}{100}$$

$$= \text{Rs.5500}$$

Net price after deducting trade discount

$$= 55000 - 5500$$

$$= \text{Rs.49500}$$

Cash discount at 5% on Rs.49,500

$$= 49500 \times \frac{5}{100}$$

$$= \text{Rs. } 2475$$

Net amount payable to the second shopkeeper.

$$= 49{,}500 - 2475$$

$$= \text{Rs. } 47025$$

$\therefore$ The first shopkeeper should be preferred.

Ex.9: A motor bike is marked at Rs 50,000. A retailer allows a discount at 16% and still gains 20% on the cost. Find purchase price of the retailer.

Solution: List price of the motor bike = Rs 50,000

Discount at 16% on Rs 50,000.

$$= 50000 \times \frac{16}{100}$$

$$= \text{Rs.8,000}$$

$\therefore$ Selling price $= 50000 - 8000$

$$= \text{Rs.42,000}$$

In case the purchase price is Rs.100, the selling price is Rs.120

$\therefore$ For selling price = 42,000

the purchase price $= \frac{100 \times 42000}{120}$

$$= \text{Rs.35,000}$$

$\therefore$ Purchase Price of the motor bike is Rs.35,000.

Ex.10: Prakash gets a commission at 10% on cash sales and 8% on credit sales. If he receives Rs 4,400 as commission on the total sales of Rs 50,000. Find the sales made by him in cash and on credit.

Solution: Let the cash sales be Rs. x

$\therefore$ Credit sales = Rs. $(50{,}000 - x)$

Total commission =10% on x + 8% on $(50{,}000 - x)$

$$\therefore 4400 = x \times \frac{10}{100} + (50000 - x) \times \frac{8}{100}$$

$$= \frac{10x}{100} + \frac{400000 - 8x}{100}$$

$$= \frac{400000 + 2x}{100}$$

$$4400 \times 100 = 400000 + 2x$$

$\therefore$ $2x = 40000$

$x = 20{,}000$

$\therefore$ Prakash's cash sales is Rs.20,000 and his credit sales is

$50{,}000 - 20{,}000 = \text{Rs.30,000}$

Ex.11: Mr. Anand charges 10% commission on cash sales and 8% commission on credit sales. If his overall commission is 8.8%, Find the ratio of cash sales to the credit sales.

Solution: Let the cash sales be Rs. x

and the credit sales be Rs. y

Commission on cash sales is 10%

$$= x \times \frac{10}{100}$$

$$= \frac{10x}{100}$$

Commission on credit sales is 8%

$$= y \times \frac{8}{100}$$

$$= \frac{8y}{100}$$

Anand's Total Sales = $(x + y)$

$\therefore$ Commission at 8.8% on the total sales

$$= \frac{(x+y)\times 8.8}{100}$$

$$= \frac{(x+y)\times 88}{1000}$$

$\therefore$ $\frac{10x}{100} + \frac{8y}{100} = \frac{88x+88y}{1000}$

$\therefore$ $100x + 80y = 88x + 88y$

$\therefore$ $12x = 8y$

$\therefore$ $\frac{x}{y} = \frac{8}{12} = \frac{2}{3}$

$\therefore$ Ratio of cash sales to the credit sales is 2:3

EXERCISE 1.1

1. An agent charges 12% commission on the sales. What does he earn if the total sale amounts to Rs. 48,000? What does the seller get?
2. A salesman receives 3% commission on the sales up to Rs. 50,000 and 4% commission on the sales over Rs. 50,000. Find his total income on the sale of Rs. 2,00,000.
3. Ms. Saraswati was paid Rs. 88,000 as commission on the sale of computers at the rate of 12.5%. If the price of each computer was Rs. 32,000, how many computers did she sell ?
4. Anita is allowed 6.5% commission on the total sales made by her, plus a bonus of $\frac{1}{2}$ % on the sale over Rs.20,000. If her total commission amount to Rs. 3400. Find the sales made by her.
5. Priya gets salary of Rs. 15,000 per month and commission at 8% on the sales over Rs.50,000. If she gets Rs. 17,400 in a certain month, Find the sales made by her in that month.
6. The income of a broker remains unchanged though the rate of commission is increased from 4% to 5%. Find the percentage reduction in the value of the business.
7. Mr. Pavan is paid a fixed weekly salary plus commission based on percentage of sales made by him. If on the sale of Rs.68,000 and Rs. 73,000 in two successive weeks, he received in all Rs.9,880 and Rs.10,180, Find his weekly salary and the rate of commission paid to him.
8. Deepak's salary was increased from Rs.4,000 to Rs. 5,000. The sales being the same, due to reduction in the rate of commission from 3% to 2%, his income remained unchanged. Find his sales.
9. An agent is paid a commission of 7% on cash sales and 5% on credit sales made by him. If on the sale of Rs.1,02,000 the agent claims a total commission of Rs.6,420, find his cash sales and credit sales.
10. Three cars were sold through an agent for Rs.2,40,000 , Rs.2,22,000 and Rs.2,25,000 respectively. The rates of commission were 17.5% on the first, 12.5% on the second. If the agent overall received 14% commission on the total sales, find the rate of commission paid on the third car.
11. Swatantra Distributers allows 15% discount on the list price of washing machine. Further 5% discount is given for cash payment. Find the list price of the washing machine if it was sold for the net amount of Rs. 38356.25.

12. A book seller received Rs.1,530 as 15% commission on list price. Find list price of the books.

13. A retailer sold a suit for Rs.8,832 after allowing 8% discount on marked price and further 4% cash discount. If he made 38% profit, find the cost price and the marked price of the suit.

14. An agent charges 10% commission plus 2% delcreder. If he sells goods worth Rs.37,200, find his total earnings.

15. A whole seller allows 25% trade discount and 5% cash discount. What will be the net price of an article marked at Rs. 1600.

Let's discuss

1.2 Discount

a) Present worth, sum due, true discount

When businessmen sell goods on credit, the price quoted for goods includes a sufficient margin of interest for the period of credit allowed.

Suppose the goods are worth Rs.100, if the payment is made on the spot. However if a credit of 4 months is allowed, then the businessmen will quote the price by adding interest for 4 months to Rs.100. If the rate of interest is 12% per annum then the interest for 4 months will be Rs.4. Therefore the customer has to pay Rs.104 after 4 months.

In other words Rs.104 due after 4 months at 12% p.a. are equivalent to Rs.100 today. Hence Rs.100 are known as present value (P.V.) of Rs.104 due after 4 months. Hence at 12% per annum Rs.104 is known as sum due (S.D.) and Rs.4 is known as the true discount (T.D) on the sum due.

The true discount is the interest on the present worth at the given rate of interest for the given period.

We have,

Present worth + True discount = Sum due

i.e. P.W. + T.D. = S.D.

$$\text{T.D.} = \frac{\text{P.W.} \times n \times r}{100},$$

where P.W. is the principal or the present worth, n is period of the bill in years, r is the rate of interest per annum.

Drawer and Drawee:

A person who draws the bill is called the drawer. A person on whom the bill is drawn is called as Drawee.

Date of bill and Face value:

The date on which the bill is drawn is called as 'date of bill'. The amount for which the bill is drawn is called face value (F.V.) of the bill. It is the sum due on the present worth.

Period of the bill is the time after completion of which the drawer receives the payment.

Nominal Due Date and Legal Due Date:

The date on which the period of bill expires is called the nominal due date. The buyer has to make the payment to the seller on this date.

However, the buyer is allowed to pay the amount even 3 days later. These 3 days are called the days of grace. The date obtained after adding 3 days of grace to the nominal due date is known as the legal due date.

Discounting a Bill:

If the drawer of the bill wants money before the legal due date, then there is a facility available at the bank or with an agent who can discount a bill and pay the amount to the drawer (after deducting some amount from face value of the bill).This is called discounting the bill.

Banker's Discount, Cash Value, Banker's Gain:

When a bill is discounted in a bank, the banker will deduct the amount from the face value of the bill at the given rate of interest for the period from the date of discounting to the legal due date and pay the balance to the drawer. This amount is known as Banker's Discount(B.D).

The amount paid to the holder of the bill after deducting banker's discount is known as Cash Value (C.V) of the bill paid on the date of discounting.

The banker's discount is called commercial discount.

Thus, true discount is calculated on present worth and the banker's discount is calculated on the face value. Hence the banker's discount is always higher than the true discount.

The difference between the banker's discount and the true discount is called Banker's Gain (B.G). It is equal to the interest on true discount.

Abbreviations:

Present Worth	:	P.W. or P
Sum Due/Face Value	:	S.D. or F.V.
True Discount	:	T.D.
Banker's Gain	:	B.G.
Banker's Discount	:	B.D.
Cash Value	:	C.V.

Notation

Period (in Years)	:	n
Rate of Interest (p.a.)	:	r

List of Formula:

(1) S.D. = P.W. + T.D.

(2) T.D. $= \dfrac{\text{P.W.} \times n \times r}{100}$

(3) B.D. $= \dfrac{\text{S.D.} \times n \times r}{100}$

(4) B.G. = B.D. − T.D.

(5) B.G. $= \dfrac{\text{T.D.} \times n \times r}{100}$

(6) Cash value = S.D. − B.D.

SOLVED EXAMPLES

Ex.1: If the present worth of a bill due six months hence is Rs.23,000 at 8% p.a., What is sum due?

Solution: P.W. = 23,000, r = 8%

n = 6 months = $\frac{1}{2}$ year

$$\text{T.D.} = \frac{\text{P.W.} \times n \times r}{100}$$

$$= \frac{23000 \times \frac{1}{2} \times 8}{100}$$

= Rs.920

Now S.D. = P.W. + T.D.

= 23,000 + 920

= Rs.23,920

∴ The sum due is Rs.23,920

Ex.2: What is the true discount on a sum of Rs.12,720 due 9 months hence at 8% p.a. simple interest?

Solution: S.D. = Rs.12,720, $n = \frac{9}{12}$ years,

r = 8%

Now S.D. = P.W. + T.D.

$$= \text{P.W.} + \frac{\text{P.W.} \times n \times r}{100}$$

$$= \text{P.W.} \left[1 + \frac{n \times r}{100}\right]$$

$$\therefore \quad 12720 = \text{P.W.} \left[1 + \frac{\frac{9}{12} \times 8}{100}\right]$$

$$= \text{P.W.} \left[1 + \frac{6}{100}\right]$$

$$= \text{P.W.} \frac{106}{100}$$

$$\therefore \quad \text{P.W.} = \frac{12720 \times 100}{106}$$

= Rs.12,000

∴ T.D. = S.D. − P.W.

= 12,720 − 12,000

∴ T.D. = Rs.720

Ex.3: The present worth of sum of Rs.8,268 due 8 months hence is Rs.7,800. Find the rate of interest.

Solution: S.D. = Rs.8,268, P.W. = 7,800,

$$n = \frac{8}{12} \text{ years}$$

Now T.D. = S.D. − P.W.

= 8,268 − 7,800

= 468

$$\text{T.D.} = \frac{\text{P.W.} \times n \times r}{100}$$

$$468 = \frac{7800 \times \frac{8}{12} \times r}{100}$$

$$468 = 78 \times \frac{2}{3} \times r$$

$$r = \frac{468 \times 3}{78 \times 2}$$

$$= 9$$

∴ Rate of interest is 9%

Ex.4: A bill of Rs.15,000 drawn on 15th February 2015 for 10 months was discounted on 13th May 2015 at $3\frac{3}{4}\%$ p.a. Calculate banker's discount.

Solution: F.V. of the bill= Rs 15,000

$$r = 3\frac{3}{4}\% = \frac{15}{4}\%$$

Date of drawing = 15th February 2015

Period of bill = 10 months

Nominal due date = 15th December 2015

Legal due date = 18th December 2015

Date of discounting = 13th May 2015

∴ Number of days from the date of discounting to the legal due date.

May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
18	30	31	31	30	31	30	18	219

$$\text{Period} = n = \frac{219}{365} = \frac{3}{5} \text{ years}$$

B.D.= interest on F.V. for 219 days at $3\frac{3}{4}\%$ p.a.

$$= \frac{15000 \times \frac{3}{5} \times \frac{15}{4}}{100}$$

= 337.5

∴ Banker's discount is Rs.337.5

Ex.5: A bill of Rs.10,100 drawn on 14th January for 5 months was discounted on 26th March. The customer was paid Rs.9,939.25. Calculate the rate of interest.

Solution: F.V = Rs.10,100, C.V = Rs.9,939.25

Banker's Discount (B.D) = F.V- C.V

=10,100 – 9,939.25

=160.75

Date of drawing = 14th January

Period = 5 months

Nominal due date = 14th June

Legal due date = 17th June

Date of discounting = 26th March

Number of days from the date of discounting to legal due date.

March	April	May	June	Total
05	30	31	17	83

∴ B.D. = interest on F.V. for 83 days at r %

$$160.75 = 10{,}100 \times \frac{83}{365} \times \frac{r}{100}$$

$$\therefore \quad r = \frac{16075 \times 365}{10100 \times 83}$$

= 6.99

∴ Rate of interest is 6.99% ≈ 7%

Ex.6: A bill of Rs.18,000 was discounted for Rs.17,568 at a bank on 25th October 2017. If the rate of interest was 12% p.a., what is the legal date?

Solution : S.D. = 18,000 C.V. = 17,568

r = 12% p.a.

Now, B.D. = S.D. - C.V.

= 18,000 - 17,568

= Rs 432

Also B.D. $= \frac{\text{S.D.} \times n \times r}{100}$

$432 = \frac{18000 \times n \times 12}{100}$

$\therefore\ n = \frac{432 \times 100}{18000 \times 12}$

$\therefore\ n = \frac{1}{5}$

$\therefore\ n = \frac{1}{5}$ years

$\frac{365}{5}$ = 73 days

The period for which the discount is deducted is 73 days, which is counted from the date of discounting i.e. 25th October 2017.

Oct.	Nov.	Dec.	Jan.	Total
06	30	31	6	73

Hence legal due date is 6th January 2017.

Ex.7: A bill of Rs.29,200 drawn on 15th June for 6 months, was discounted for Rs.28,960 at 5% p.a. On which day was the bill discounted?

Solution: F.V. = Rs 29200 C.V. = Rs 28960

Now B.D. = F.V. – C.V.

= 29200 − 28960

= Rs. 240

Date of drawing = 15th June

Period = 6 months

Nominal due date = 15th December

Legal due date = 18th December

B.D. = Interest on F.V. for n at 5% p.a.

$\therefore\quad 240 = \frac{29200 \times \frac{n}{365} \times 5}{100}$

$\therefore\quad n = \frac{240 \times 365}{5 \times 292}$

= 60 days

$\therefore$ Date of discounting is 60 days before 18th December

Dec.	Nov.	Oct.	Total
18	30	12	60

Date of discounting = (31 – 12) = 19th Oct.

$\therefore$ Date of discounting is 19th October.

Ex.8: Find the true discount, banker's discount and banker's gain on a bill of Rs.64,800 due 3 months hence discounted at 5% p.a.

Solution: S.D. = 64,800,

n = 3 months = $\frac{3}{12} = \frac{1}{4}$ years

r = 5% p.a.

Now B.D. $= \frac{\text{S.D.} \times n \times r}{100}$

$= 64{,}800 \times \frac{1}{4} \times \frac{5}{100}$

= Rs. 810

Let T.D. = Rs. x

B.D. = T.D. + Interest on T.D. for $\frac{1}{4}$ year at 5% p.a.

$810 = x + \left(x \times \frac{1}{4} \times \frac{5}{100}\right)$

$= x + \frac{x}{80}$

$= \frac{81x}{80}$

$$\therefore x = \frac{810 \times 80}{81}$$

$$= \text{Rs.}800$$

Banker's gain = banker's discount − true discount

i.e. B.G. = B.D. − T.D.

= 810 − 800

= Rs.10

∴ Banker's gain is Rs.10

Ex.9: The difference between true discount and banker's discount on a bill due 6 months hence at 4% is Rs.160. Calculate true discount, banker's discount and amount of bill.

Solution: Let T.D. = Rs. x, n = $\frac{6}{12} = \frac{1}{2}$ years

B.G. = B.D. – T.D.

= Interest on T.D for 6 months at 4% p.a.

$$\therefore 160 = x \times \frac{1}{2} \times \frac{4}{100} = \frac{x}{50}$$

$\therefore x$ = 8,000

B.D. = B.G. + T.D.

= 160 + 8,000

= 8,160

∴ Banker's Discount = Rs.8,160

B.D. = interest on F.V. for 6 months at 4% p.a.

Let the face value (F.V.) be y.

$$\therefore \text{B.D.} = y \times \frac{1}{2} \times \frac{4}{100}$$

$$8{,}160 = \frac{y}{50}$$

$\therefore$ y = 4,08,000

∴ Amount of bill is Rs.4,08,000

Ex.10: A banker's discount calculated for 1 year is 13.5 times its banker's gain. Find the rate of interest.

Solution: Let the banker's gain = Rs. x

∴ B.D. = 13.5 × x

= 13.5 x

Now B.G. = B.D – T.D.

x = 13.5x – T.D.

T.D. = 12.5 x

But B.G. = Interest on T.D. for 1 year

$$= \frac{\text{T.D.} \times n \times r}{100}$$

$$x = \frac{12.5x \times 1 \times r}{100}$$

100 x = 12.5 xr

r = 8

∴ Rate of interest is 8% p.a.

Let's Remember

- Invoice Price = List Price (catalogue price) – Trade Discount
  i.e. I.P. = L.P. – T.P.
- Net Selling Price = Invoice Price – Cash Discount
  i.e. N.S.P. = I.P. – C.D.
- Profit = Net Selling price (NSP) – Cost Price (C.P)
- Loss = Cost Price (C.P) – Net Selling Price (NSP)
- Sum due = Present Worth + True Discount
  i.e. S.D = P.W. + T.D.
- T.D. = $\frac{\text{P.W.} \times n \times r}{100}$
- B.D. = $\frac{\text{S.D.} \times n \times r}{100}$
- B.G. = B.D. − T.D.
- B.G. = $\frac{\text{T.D.} \times n \times r}{100}$
- Cash value = S.D. − B.D.

EXERCISE 1.2

1. What is the present worth of a sum of Rs.10,920 due six months hence at 8% p.a. simple interest?
2. What is sum due of Rs.8,000 due 4 months hence at 12.5% simple interest?
3. True discount on the sum due 8 months hence at 12% p.a. is Rs.560. Find the sum due and present worth of the bill.
4. The true discount on a sum is $\frac{3}{8}$ of the sum due at 12% p.a. Find the period of the bill.
5. 20 copies of a book can be purchased for a certain sum payable at the end of 6 months and 21 copies for the same sum in ready cash. Find the rate of interest.
6. Find the true discount, Banker's discount and Banker's gain on a bill of Rs.4,240 due 6 months hence at 9% p.a.
7. True discount on a bill is Rs.2,200 and bankers discount is Rs.2,310. If the bill is due 10 months, hence, find the rate of interest.
8. A bill of Rs.6,935 drawn on 19th January 2015 for 8 months was discounted on 28th February 2015 at 8% p.a. interest. What is the banker's discount? What is the cash value of the bill?
9. A bill of Rs.8,000 drawn on 5th January 1998 for 8 months was discounted for Rs.7,680 on a certain date. Find the date on which it was discounted at 10% p.a.
10. A bill drawn on 5th June for 6 months was discounted at the rate of 5% p.a. on 19th October. If the cash value of the bill is Rs 43,500, find face value of the bill.
11. A bill was drawn on 14th April for Rs.7,000 and was discounted on 6th July at 5% p.a. The Banker paid Rs.6,930 for the bill. Find period of the bill.
12. If difference between true discount and banker's discount on a sum due 4 months hence is Rs 20. Find true discount, banker's discount and amount of bill, the rate of simple interest charged being 5%p.a.
13. A bill of Rs.51,000 was drawn on 18th February 2010 for 9 months. It was encashed on 28th June 2010 at 5% p.a. Calculate the banker's gain and true discount.
14. A certain sum due 3 months hence is $\frac{21}{20}$ of the present worth, what is the rate of interest?
15. A bill of a certain sum drawn on 28th February 2007 for 8 months was encashed on 26th March 2007 for Rs.10,992 at 14% p.a. Find the face value of the bill.

MISCELLANEOUS EXERCISE - 1

I) Choose the correct alternative.

1. An agent who gives guarantee to his principal that the party will pay the sale price of goods is called
   a. Auctioneer b. Del Credere Agent
   c. Factor d. Broker
2. An agent who is given the possession of goods to be sold is known as
   a. Factor b. Broker
   c. Auctioneer d. Del Credere Agent
3. The date on which the period of the bill expires is called
   a. Legal Due Date
   b. Grace Date
   c. Nominal Due Date
   d. Date of Drawing
4. The payment date after adding 3 days of grace period is known as
   a. The legal due date
   b. The nominal due date
   c. Days of grace
   d. Date of drawing
5. The sum due is also called as
   a. Face value b. Present value
   c. Cash value d. True discount

6. P is the abbreviation of
   a. Face value b. Present worth
   c. Cash value d. True discount
7. Banker's gain is simple interest on
   a. Banker's discount
   b. Face Value
   c. Cash value
   d. True discount
8. The marked price is also called as
   a. Cost price b. Selling price
   c. List price d. Invoice price
9. When only one discount is given then
   a. List price = Invoice price
   b. Invoice price = Net selling price
   c. Invoice price = Cost price
   d. Cost price = Net selling price
10. The difference between face value and present worth is called
   a. Banker's discount
   b. True discount
   c. Banker's gain
   d. Cash value

II) Fill in the blanks.

1. A person who draws the bill is called ____
2. An _____ is an agent who sells the goods by auction.
3. Trade discount is allowed on the ___ price.
4. The banker's discount is also called _____.
5. The banker's discount is always _____ than the true discount.
6. The difference between the banker's discount and the true discount is called _____.
7. The date by which the buyer is legally allowed to pay the amount is known as _____.
8. A _____ is an agent who brings together the buyer and the seller.
9. If buyer is allowed both trade and cash discounts, _____ discount is first calculated on _____ price.
10. _____ = List price (catalogue Price) – Trade Discount.

III) State whether each of the following is True or False.

1. Broker is an agent who gives a guarantee to seller that the buyer will pay the sale price of goods.
2. Cash discount is allowed on list price.
3. Trade discount is allowed on catalogue price.
4. The buyer is legally allowed 6 days grace period.
5. The date on which the period of the bill expires is called the nominal due date.
6. The difference between the banker's discount and true discount is called sum due.
7. The banker's discount is always lower than the true discount.
8. The bankers discount is also called as commercial discount.
9. In general cash discount is more than trade discount.
10. A person can get both, trade discount and cash discount.

IV) Solve the following problems.

1. A salesman gets a commission of 6.5% on the total sales made by him and bonus of 1% on sales over Rs.50,000. Find his total income on a turnover of Rs.75,000.
2. A shop is sold at 30% profit, the amount of brokerage at the rate of $\frac{3}{4}$ % amounts to Rs.73,125. Find cost of the shop.

3. A merchant gives 5% commission and 1.5% del credere to his agent. If the agent sells goods worth Rs.30,600 how much does he get? How much does the merchant receive?

4. After deducting commission at $7\frac{1}{2}\%$ on first Rs.50,000 and 5% on balance of sales made by him, an agent remits Rs.93750 to his principal. Find the value of goods sold by him.

5. The present worth of Rs.11,660 due 9 months hence is Rs.11,000. Find the rate of interest.

6. An article is marked at Rs.800, a trader allows a discount of 2.5% and gains 20% on the cost. Find the cost price of the article

7. A salesman is paid fixed monthly salary plus commission on the sales. If on sale of Rs.96,000 and Rs.1,08,000 in two successive months he receives in all Rs.17,600 and Rs.18,800 respectively. Find his monthly salary and rate of commission paid to him.

8. A merchant buys some mixers at 15% discount on catalogue price. The catalogue price is Rs.5,500 per piece of mixer. The freight charges amount to $2\frac{1}{2}\%$ on the catalogue price. The merchant sells each mixer at 5% discount on catalogue price. His net profit is Rs.41,250. Find number of mixers.

9. A bill is drawn for Rs.7000 on 3rd May for 3 months and is discounted on 25th May at 5.5%. Find the cash value.

10. A bill was drawn on 14th April 2005 for Rs.3,500 and was discounted on 6th July 2005 at 5% per annum. The banker paid Rs.3,465 for the bill. Find the period of the bill.

11. The difference between true discount and banker's discount on 6 months hence at 4% p.a. is Rs.80. Find the true discount, banker's discount and amount of the bill.

12. A manufacturer makes clear profit of 30% on cost after allowing 35% discount. If the cost of production rises by 20%, by what percentage should he reduce the rate of discount so as to make the same rate of profit keeping his list prices unaltered.

13. A trader offers 25% discount on the catalogue price of a radio and yet makes 20% profit. If he gains Rs.160 per radio, what must be the catalogue price of the radio?

14. A bill of Rs.4,800 was drawn on 9th March 2006 for 6 months and was discounted on 19th April 2006 at $6\frac{1}{4}\%$ p.a. How much does the banker charge and how much does the holder receive?

15. A bill of Rs.65,700 drawn on July 10 for 6 months was discounted for Rs.65,160 at 5% p.a. On what day was the bill discounted?

16. An agent sold a car and charged 3% commission on sale value. If the owner of the car received Rs.48,500, find the sale value of the car. If the agent charged 2% from the buyer, find his total remuneration.

17. An agent is paid a commission of 4% on cash sales and 6% on credit sales made by him. If on the sale of Rs.51,000 the agent claims a total commission of Rs.2,700, find the sales made by him for cash and on credit.

Activities

1) The value of the goods sold = Rs. x

Commission @ 7.5% on first Rs.10,000

= Rs. $\square$

Commission @ 5% on the balance

Rs.$(x - 10{,}000)$ = $\frac{5}{100} \times \square$

= Rs. $\square$

An Agent remits Rs.33950 to his Principal

$\therefore$ $x - \square - \square = 33{,}950$

$\frac{95x}{100} = 33950 + \square$

$\frac{19x}{\square} = 34{,}200$

x = Rs. $\square$

2) Rate of discount = 15% and other charges = 2.5% on list price.

List price of tricycle in Mumbai = Rs. 600

Net Selling price = List Price – Discount + Other charges

$= 600 - \frac{\square}{100} \times 600 + \frac{2.5}{100} \times \square$

List price of tricycle in Nashik = Rs. 750

Rate of discount = 10%

Net Selling price = List Price – Discount

$= \square - \frac{\square}{100} \times 750$

= Rs.675

A merchant bought tricycles from Mumbai and sold it in Nashik and made a profit of Rs.13,500

$\therefore$ Profit per tricycles = 675 – $\square$

= Rs.150

No. of tricycles bought = $\frac{\text{Total Profit}}{\text{Profit per tricycles}}$

$= \frac{13500}{\square}$

$= \square$

3) Cost Price = Rs.100

A manufacturer makes a profit of 30% on cost after allowing 35% discount.

$\therefore$ Selling price = $\square$ + profit

$= 100 + \frac{30}{100} \times \square$

= Rs.130

$\therefore$ Selling price = List price – Discount

$\therefore$ $130 = \text{List price} - \frac{35}{100} \times \square$

$\therefore$ $130 = \frac{65}{100} \times \square$

$\therefore$ List price = $\frac{130 \times 100}{\square}$

= Rs.200

Now the cost of production rises by 20%

$\therefore$ New cost price = $100 + \frac{\square}{100} \times 100$

= Rs.120

New list price = Rs 200

Rate of discount = x%

$\therefore$ Selling price = $\square$ + profit

$= 120 + \frac{\square}{100} \times 120$

= Rs.156

$\therefore$ List price = Selling price + Discount

$\therefore$ $\square = \square + \frac{x}{100} \times 200$

$\therefore$ $2x = 200 - \square$

$\therefore$ $2x = 44$

$\therefore$ $x = \square$

$\therefore$ Reduction in the rate of discount

$= \square - 22$

= 13%

4) Face Value (S) = Rs 4,015 r = 8% p.a.

Date of drawing bill = 19th January 2018

Period of the bill = 8 months

Nominal Due date = ☐

Legal Due date = 22nd September 2018

Date of discounting the bill = 28th February 2018

Number of days from date of discounting to legal due date

March	April	May	June	July	Aug.	Sept.	Total
31	☐	☐	30	☐	31	☐	206 days

$\therefore$ B.D. $= \frac{s \cdot n \cdot r}{100} = 4015 \times \frac{206}{365} \times \frac{8}{100}$

= ₹ 181.30

$\therefore$ C.V. = 4015 – ☐

= ₹ 3833.70

5. Face value (S) = Rs.7,300, r = 12% p.a.

Cash value (C.V.) = Rs.7,108

$\therefore$ B.D. = S – ☐ = Rs.192

Date of drawing the bill = 7th June 2017

Date of discounting the bill = 22nd October 2017

Number of days from date of discounting to legal due date = x

$\therefore$ B.D. $= \frac{S.D. \times n \times r}{100}$

$\therefore$ ☐ = ☐ $\times \frac{x}{\square} \times \frac{12}{100}$

$\therefore$ x = ☐ days

$\therefore$ Legal due date is 80 days after the date of discounting the bill.

Oct.	Nov.	Dec.	Jan.	Total
☐	30	☐	☐	80

$\therefore$ Legal due date = 10th Jan. ☐

Nominal due date = 7th Jan. ☐

$\therefore$ period of the bill = ☐ months