

2

Sales Tax and Value Added Tax

2.1 SALES TAX

Every State Government needs money for the development of the state as well as to meet its non-development expenses like payment of salaries to its employees, health, education etc. In order to collect revenue (money), State Government levies tax on the sale of goods within the state. This tax is called **sales tax**. A customer has to pay sales tax on the goods bought by him or her. The Union Government also levies tax, known as **central sales tax (C.S.T.)** on the movement of goods from one state to another.

2.1.1 Calculation of sales tax

The rates of sales tax are different in different states. Also, the rate of sales tax differ on different goods. Some goods are exempted from sales tax and on some goods it is levied at the *first point* and the customer does not have to pay it. However, the rate of sales tax on different goods will be given in every problem.

Sales tax is calculated as follows :

- (i) When no discount is given—marked (list) price of article becomes the sale price, and the sales tax is calculated on it.
- (ii) When discount (rebate) is given—first calculate the discount; deduct it from the marked price and find the selling price of the article, and then calculate the sales tax on the selling price of the article.

Note

The symbol @ means at the rate of.

ILLUSTRATIVE EXAMPLES

✓ **Example 1.** Rohan bought a shirt which is quoted at ₹ 375 plus sales tax at the rate of 8%. Find the amount paid by Rohan.

Solution. List price of the shirt = ₹ 375.
Rate of sales tax = 8%.

$$\therefore \text{Sales tax} = ₹ \left(375 \times \frac{8}{100} \right) = ₹ 30.$$

$$\therefore \text{Total cost of the shirt} = ₹ 375 + ₹ 30 = ₹ 405.$$

Hence, the amount paid by Rohan = ₹ 405.

Example 2. Govinda bought the following electrical goods from a shop :

Item	Quantity	Rate
Fans	4	₹ 675 each
Bulbs	2 dozens	₹ 110 per dozen
Switches	5 dozens	₹ 41 per dozen
Tubes	6	₹ 135 each
Electric wire	230 metres	₹ 2.50 per metre

If the sales tax is charged at the rate of 7% on all these goods, find the total amount paid by Govinda.

Solution. Cost of 4 fans = ₹ (675 × 4) = ₹ 2700.

Cost of 2 dozen bulbs = ₹ (110 × 2) = ₹ 220.

Cost of 5 dozen switches = ₹ (41 × 5) = ₹ 205.

Cost of 6 tubes = ₹ (135 × 6) = ₹ 810.

Cost of 230 metres wire = ₹ (2.50 × 230) = ₹ 575.

$$\therefore \text{Total cost of all goods} = ₹ 4510.$$

$$\therefore \text{Sales tax at the rate of 7\%} = ₹ \left(4510 \times \frac{7}{100} \right) = ₹ 315.70.$$

$$\therefore \text{The total amount paid by Govinda} = ₹ 4510 + ₹ 315.70 \\ = ₹ 4825.70.$$

Example 3. Hasina buys the following goods from a departmental store :

Cosmetics worth ₹ 345;

Medicines worth ₹ 228;

Stationery worth ₹ 170;

Bakery products worth ₹ 93.

If the sales tax is chargeable at the rate of 10% on cosmetics, 7% on medicines, 5% on stationery and the bakery products are exempted from sales tax, find the total amount to be paid by Hasina.

Solution. Cost of cosmetics = ₹ 345.

Sales tax on cosmetics = ₹ $\left(345 \times \frac{10}{100} \right)$ = ₹ 34.50.

$$\therefore \text{Total cost of cosmetics} = ₹ 345 + ₹ 34.50 = ₹ 379.50.$$

Cost of medicines = ₹ 228.

Sales tax on medicines = ₹ $\left(228 \times \frac{7}{100} \right)$ = ₹ 15.96.

$$\therefore \text{Total cost of medicines} = ₹ 228 + ₹ 15.96 = ₹ 243.96.$$

Cost of stationery = ₹ 170.

Sales tax on stationery = ₹ $\left(170 \times \frac{5}{100} \right)$ = ₹ 8.50.

$$\therefore \text{Total cost of stationery} = ₹ 170 + ₹ 8.50 = ₹ 178.50.$$

As bakery products are exempted from sales tax, no sales tax is chargeable on these products.

$$\therefore \text{Total cost of bakery products} = ₹ 93.$$

$$\begin{aligned} \therefore \text{The total amount to be paid for all goods by Hasina} \\ &= ₹ 379.50 + ₹ 243.96 + ₹ 178.50 + ₹ 93 \\ &= ₹ 894.96. \end{aligned}$$

Example 4. I paid ₹ 1058.40 for a bicycle (including sales tax) quoted at ₹ 980. Find the rate of sales tax.

Solution. The total amount (including sales tax) paid = ₹ 1058.40

List price of the bicycle = ₹ 980.

$$\therefore \text{The amount of sales tax paid} = ₹ 1058.40 - ₹ 980 = ₹ 78.40.$$

$$\therefore \text{Rate of sales tax} = \left(\frac{78.40}{980} \times 100 \right) \% = 8\%.$$

Example 5. Srivastava purchased a camera for ₹ 2365, including sales tax @ 10%. Find the list price of the camera.

Solution. Let the list price of the camera be ₹ x , sales tax = 10%.

$$\therefore \text{Sales tax on the camera} = ₹ \left(x \times \frac{10}{100} \right) = ₹ \frac{x}{10}.$$

$$\therefore \text{Total cost of the camera} = ₹ \left(x + \frac{x}{10} \right) = ₹ \frac{11x}{10}.$$

$$\text{According to given, } \frac{11x}{10} = 2365 \Rightarrow x = 2365 \times \frac{10}{11} = 2150.$$

$$\therefore \text{The list price of the camera} = ₹ 2150.$$

Example 6. A colour T.V. is marked for sale for ₹ 17600, which includes sales tax at 10%. Calculate the sales tax in rupees. (2000)

Solution. Let the selling price of T.V. be ₹ x , sales tax = 10%.

$$\therefore \text{Sales tax on T.V.} = ₹ \left(x \times \frac{10}{100} \right) = ₹ \frac{x}{10}.$$

$$\therefore \text{Marked price of T.V.} = \text{S.P. of T.V.} + \text{sales tax on T.V.}$$

$$= ₹ \left(x + \frac{x}{10} \right) = ₹ \frac{11x}{10}.$$

$$\text{According to given, } \frac{11}{10} x = 17600 \Rightarrow x = 17600 \times \frac{10}{11} = 16000.$$

$$\therefore \text{Sales tax on T.V.} = ₹ \frac{x}{10} = ₹ \frac{16000}{10} = ₹ 1600.$$

Example 7. The price of a T.V. set inclusive of sales tax of 9% is ₹ 13407. Find its marked price. If the sales tax is increased to 13%, how much more does the customer pay for the T.V.? (2002)

Solution. Let the marked price of T.V. be ₹ x , sales tax = 9%.

$$\therefore \text{Sales tax on T.V.} = ₹ \left(x \times \frac{9}{100} \right) = ₹ \frac{9x}{100}.$$

$$\therefore \text{Total cost of T.V.} = ₹ \left(x + \frac{9x}{100} \right) = ₹ \frac{109}{100} x.$$

$$\text{According to given, } \frac{109}{100} x = 13407$$

$$\Rightarrow x = \frac{13407 \times 100}{109} = 12300.$$

$$\therefore \text{The marked price of T.V.} = ₹ 12300.$$

Now, if the sales tax is 13%, then

$$\begin{aligned}\text{Sales tax on T.V.} &= 13\% \text{ of } ₹ 12300 = ₹ \left(12300 \times \frac{13}{100} \right) \\ &= ₹ 1599.\end{aligned}$$

$$\begin{aligned}\therefore \text{Total amount paid by the customer} &= ₹ (12300 + 1599) \\ &= ₹ 13899.\end{aligned}$$

$$\begin{aligned}\therefore \text{The amount of more money paid by the customer} \\ &= ₹ 13899 - ₹ 13407 = ₹ 492.\end{aligned}$$

Example 8. Samir bought a shirt for ₹ 336, including 12% sales tax and a necktie for ₹ 110 including 10% sales tax. Find the printed price (without sales tax) of shirt and necktie together.

Solution. Let the printed price of the shirt be ₹ x , sales tax = 12%.

$$\therefore \text{Sales tax on the shirt} = ₹ \left(x \times \frac{12}{100} \right) = ₹ \frac{3x}{25}.$$

$$\therefore \text{Total cost of the shirt} = ₹ \left(x + \frac{3x}{25} \right) = ₹ \frac{28x}{25}.$$

$$\text{According to given, } \frac{28x}{25} = 336 \Rightarrow x = 336 \times \frac{25}{28} = 300.$$

$$\therefore \text{The printed price of the shirt} = ₹ 300.$$

Let the printed price of the necktie be ₹ y , sales tax = 10%.

$$\therefore \text{Sales tax on the necktie} = ₹ \left(y \times \frac{10}{100} \right) = ₹ \frac{y}{10}.$$

$$\therefore \text{Total cost of the necktie} = ₹ \left(y + \frac{y}{10} \right) = ₹ \frac{11y}{10}.$$

$$\text{According to given, } \frac{11y}{10} = 110 \Rightarrow y = 110 \times \frac{10}{11} = 100.$$

$$\therefore \text{The printed price of the necktie} = ₹ 100.$$

$$\begin{aligned}\text{Hence, the printed price of the shirt and the necktie together} \\ &= ₹ 300 + ₹ 100 = ₹ 400.\end{aligned}$$

Example 9. Ashok purchased a car marked at ₹ 536500 at a discount of 8%. If the sales tax is charged @ 10%, find the amount Ashok paid for the car.

Solution. Marked price of the car = ₹ 536500, rate of discount = 8%.

$$\therefore \text{Amount of discount} = ₹ \left(536500 \times \frac{8}{100} \right) = ₹ 42920.$$

$$\therefore \text{Selling price of the car} = ₹ (536500 - 42920) = ₹ 493580.$$

$$\text{Rate of sales tax} = 10\%.$$

$$\therefore \text{Sales tax on the car} = ₹ \left(493580 \times \frac{10}{100} \right) = ₹ 49358.$$

$$\begin{aligned}\therefore \text{Net amount paid by Ashok} &= ₹ (493580 + 49358) \\ &= ₹ 542938.\end{aligned}$$

Example 10. Ms. Chawla goes to a shop to buy a leather coat which costs ₹ 735. The rate of the sales tax is 5%. She tells the shopkeeper to reduce the price to such an extent that she has to pay ₹ 735, inclusive of sales tax. Find the reduction needed in the price of the coat.

(2004)

Solution. Let the reduced price of the leather coat be ₹ x .

$$\text{Sales tax on ₹ } x = ₹ \left(x \times \frac{5}{100} \right) = ₹ \frac{x}{20}.$$

$$\therefore \text{Amount paid by Ms. Chawla} = ₹ \left(x + \frac{x}{20} \right) = ₹ \frac{21}{20} x.$$

$$\text{According to given, } \frac{21}{20} x = 735 \Rightarrow x = \frac{20}{21} \times 735 = 700.$$

\therefore The reduced price of the leather coat = ₹ 700.

Hence, the reduction needed in the price of coat = ₹ 735 – ₹ 700 = ₹ 35.

Example 11. The price of a bicycle is ₹ 2420 inclusive of sales tax at the rate of 10% on its listed price. A buyer asks for a discount on the listed price so that after charging the sales tax, the selling price becomes equal to the listed price. Find the amount of discount which the seller has to allow for the deal.

Solution. Let the listed price of the bicycle be ₹ P .

$$\text{Sales tax} = 10\% \text{ of ₹ } P = \frac{10}{100} \text{ of ₹ } P = ₹ \frac{P}{10}.$$

$$\therefore \text{Selling price} = ₹ P + ₹ \frac{P}{10} = ₹ \frac{11}{10} P.$$

$$\text{According to given, } \frac{11}{10} P = 2420 \Rightarrow P = 2200.$$

\therefore Printed price of the bicycle is ₹ 2200.

Let the amount of discount be ₹ x .

$$\therefore \text{The reduced price of the bicycle} = ₹ (2200 - x).$$

$$\text{Sales tax} = 10\% \text{ of ₹ } (2200 - x) = ₹ \frac{2200 - x}{10}.$$

$$\begin{aligned} \therefore \text{New selling price} &= ₹ (2200 - x) + ₹ \frac{2200 - x}{10} \\ &= ₹ \frac{11}{10} (2200 - x). \end{aligned}$$

$$\text{According to given, } \frac{11}{10} (2200 - x) = 2200$$

$$\Rightarrow 2200 - x = 2200 \times \frac{10}{11}$$

$$\Rightarrow 2200 - x = 2000 \Rightarrow x = 200.$$

\therefore The amount of discount = ₹ 200.

Example 12. Dinesh bought an article for ₹ 374, which included a discount of 15% on the marked price and a sales tax of 10% on the reduced price. Find the marked price of the article. (2007)

Solution. Let the marked price of the article be ₹ x , discount = 15%.

$$\therefore \text{Amount of discount} = ₹ \left(x \times \frac{15}{100} \right) = ₹ \frac{3x}{20}.$$

$$\therefore \text{Cost of the article after discount} = ₹ x - ₹ \frac{3x}{20} = ₹ \frac{17}{20} x.$$

Since sales tax is 10% on the reduced price,

$$\text{amount of sales tax} = ₹ \left(\frac{17}{20} x \times \frac{10}{100} \right) = ₹ \frac{17}{200} x.$$

$$\therefore \text{Net amount to be paid} = ₹ \frac{17}{20}x + ₹ \frac{17}{200}x = ₹ \left(\frac{17}{20}x + \frac{17}{200}x \right).$$

$$\text{According to given, } \frac{17}{20}x + \frac{17}{200}x = 374$$

$$\Rightarrow \frac{17}{20} \left(1 + \frac{1}{10} \right) x = 374 \Rightarrow \frac{17}{20} \times \frac{11}{10} x = 374$$

$$\Rightarrow x = 400.$$

Hence, the marked price of the article = ₹ 400.

Example 13. A shopkeeper buys an article for ₹ 900 from a wholesaler, which includes a discount of 10% on the printed price. He marks-up the printed price by 15% and sells it for ₹ 1219 which includes a sales tax on the marked-up price. Find :

(i) the rate of sales tax (ii) the profit percentage of the shopkeeper.

Solution. Let the printed price of the article be ₹ P. Discount is 10%.

$$(i) \quad \text{Cost price} = (\text{printed price}) \left(1 - \frac{10}{100} \right)$$

$$\therefore ₹ 900 = ₹ \left(P \times \frac{9}{10} \right) \Rightarrow 900 = \frac{9P}{10} \Rightarrow P = 1000.$$

\therefore The printed price of the article = ₹ 1000.

As the price is marked-up by 15% on the printed price,

$$\begin{aligned} \text{marked-up price} &= ₹ 1000 \times \left(1 + \frac{15}{100} \right) = ₹ \left(1000 \times \frac{115}{100} \right) \\ &= ₹ 1150. \end{aligned}$$

Selling price of the article is ₹ 1219 (given).

$$\therefore \text{The amount of sales tax} = ₹ 1219 - ₹ 1150 = ₹ 69.$$

$$\therefore \text{The rate of sales tax} = \left(\frac{69}{1150} \times 100 \right) \% = 6\%.$$

$$(ii) \quad \begin{aligned} \text{The amount of profit} &= \text{marked-up price} - \text{cost price} \\ &= ₹ 1150 - ₹ 900 = ₹ 250. \end{aligned}$$

$$\therefore \text{Profit percentage} = \left(\frac{250}{900} \times 100 \right) \% = \frac{250}{9} \% = 27 \frac{7}{9} \%.$$

Example 14. The catalogue price of a computer set is ₹ 45000. The shopkeeper gives a discount of 7% on the listed price. He gives a further off-season discount of 4% on the balance. However, sales tax at 8% is charged on the remaining amount. Find :

(i) the amount of sales tax a customer has to pay.

(ii) the final price he has to pay for the computer set.

(2005)

Solution. The catalogue price of computer = ₹ 45000, rate of discount = 7%.

$$\text{Amount of discount} = ₹ \left(45000 \times \frac{7}{100} \right) = ₹ 3150.$$

$$\text{Balance} = ₹ 45000 - ₹ 3150 = ₹ 41850.$$

$$\text{Rate of off-season discount} = 4\%.$$

$$\text{Amount of off-season discount} = ₹ \left(41850 \times \frac{4}{100} \right) = ₹ 1674.$$

$$\text{Selling price of the computer} = ₹ 41850 - ₹ 1674 = ₹ 40176.$$

(i) Rate of sales tax = 8%.

$$\text{Amount of sales tax} = ₹ \left(40176 \times \frac{8}{100} \right) = ₹ 3214.08$$

\therefore The amount of sales tax which a customer has to pay = ₹ 3214.08

$$\begin{aligned}
 \text{(ii) The final price which the customer has to pay for the computer} \\
 &= ₹ 40176 + ₹ 3214.08 \\
 &= ₹ 43390.08
 \end{aligned}$$

Example 15. A shopkeeper buys an article at a rebate of 30% on the printed price. He spends ₹ 40 on transportation of the article. After charging sales tax at the rate of 7% on the printed price, he sells the article for ₹ 856. Find his profit percentage.

Solution. Let the printed price of the article be ₹ P.

Sales tax is charged at 7% on the printed price,

$$\text{amount of sales tax} = \frac{7}{100} \text{ of } ₹ P = ₹ \frac{7P}{100}.$$

$$\therefore \text{The selling price} = ₹ P + ₹ \frac{7P}{100} = ₹ \frac{107P}{100}.$$

$$\text{According to given, } \frac{107}{100} P = 856 \Rightarrow P = 800.$$

$$\therefore \text{The printed price of the article} = ₹ 800.$$

As the rebate is 30% on the printed price,

$$\begin{aligned}
 \text{cost price of the article} &= ₹ 800 \times \left(1 - \frac{30}{100}\right) \\
 &= ₹ \left(800 \times \frac{7}{10}\right) = ₹ 560.
 \end{aligned}$$

As ₹ 40 is spent on transportation,

$$\text{the total cost price of the article} = ₹ 560 + ₹ 40 = ₹ 600.$$

$$\begin{aligned}
 \therefore \text{The amount of profit} &= \text{printed price} - \text{total cost price} \\
 &= ₹ 800 - ₹ 600 = ₹ 200.
 \end{aligned}$$

$$\therefore \text{Profit percentage} = \left(\frac{200}{600} \times 100\right) \% = \frac{100}{3} \% = 33 \frac{1}{3} \%.$$

Exercise 2.1

- Gauri buys garments worth ₹ 1730. If the sales tax is charged at the rate of 5%, find the amount she has to pay for the garments.
- The list price of a washing machine is ₹ 17650. If the sales tax is chargeable at the rate of 8%, find the amount the buyer has to pay for it.
- Tinku purchased the following stationery goods from a shop :

Item	Quantity	Rate
Pens	6	₹ 5.50 each
Pencils	2 dozens	₹ 22 per dozen
Copies	3 dozens	₹ 108 per dozen
Rubbers	10	₹ 1.08 each

If the sales tax is charged at 6%, find the total amount paid by him.

- Ritu buys the following goods from a departmental store :

Crockery worth	₹ 2375
Readymade garments worth	₹ 1540
Utensils worths	₹ 685
Eatables worth	₹ 245

If the sales tax is chargeable at the rate of 10% on crockery, 6% on garments, 5% on utensils and eatables are exempted from sales tax, find the total amount to be paid by Ritu.

5. Atul purchased a motor cycle which was quoted at ₹ 23500. The shopkeeper charged sales tax at the rate of 10%. As Atul wanted to take the motor cycle outside the state, the shopkeeper charged 2% extra as central sales tax. Find the amount Atul had to pay for the motorcycle.

Note

Central sales tax is charged on the list price.

6. Tarun bought an article for ₹ 8000 and spent ₹ 1000 for transportation. He marked the article at ₹ 11700 and sold it to a customer. If the customer had to pay 10% sales tax, find
- the customer's price.
 - Tarun's profit percent.
7. Swaran paid ₹ 20 as sales tax on a pair of shoes worth ₹ 250. Find the rate of sales tax.
8. A colour T.V. is available for ₹ 13440 inclusive of sales tax. If the original cost of T.V. is ₹ 12000, find the rate of sales tax.
9. The price of a T.V. set inclusive of sales tax is ₹ 13161. If the rate of sales tax is 7%, find its basic price.
10. The price of a washing machine, inclusive of sales tax, is ₹ 13530. If the sales tax is 10%, find its basic price. (2003)
11. A refrigerator is marked for sale at ₹ 17600 inclusive of sales tax. If the rate of sales tax is 10%, calculate :
- the list price of the refrigerator
 - the amount of sales tax.
12. Sadhvi bought a set of cosmetic items for ₹ 345 including 15% sales tax and a purse for ₹ 110 including 10% sales tax. What is the total amount of sales tax charged on the whole transaction ?
13. List price of a washing machine is ₹ 9000. The dealer allows a discount of 5% on the cash payment. How much money will a customer pay to the dealer in cash, if the rate of sales tax is 10% ?
14. Sarita buys goods worth ₹ 5500. She gets a rebate of 5% on it. After getting the rebate, if sales tax is charged at 5%, find the amount she has to pay for the goods.
15. Raman went to a shop to buy a fan costing ₹ 750. The rate of sales tax is 6%. He requests the shopkeeper to reduce the price of the fan to such an extent that he has to pay ₹ 742, inclusive of the sales tax. Find the reduction needed in the price of the fan.
16. John goes to a shop to buy a bicycle quoted at ₹ 1000. The rate of sales tax is 12% on it. He asks the shopkeeper for a rebate on the price of the bicycle to such an extent that he has to pay ₹ 1008, inclusive of sales tax. Find the rebate percentage on the price of the bicycle.
17. Kiran purchases an article for ₹ 5400 which includes 10% rebate on the marked price and 20% sales tax on the remaining price. Find the marked price of the article. (2006)
18. The catalogue price of a colour T.V. is ₹ 24000. The shopkeeper gives a discount of 8% on the listed price. He gives a further off-season discount of 5% on the balance. But sales tax at 10% is charged on the remaining amount. Find :
- the sales tax amount a customer has to pay.
 - the final price he has to pay for the colour T.V. (2001)
19. The printed price of an article is ₹ 1200. A shopkeeper marked-up the printed price of the article by 15%. On request, he gives a discount of 5% on the marked-up price. Find the price of the article which a customer has to pay for the article, if sales tax is charged at 6%.

20. A shopkeeper buys an article for ₹ 12000 and marks up its price by 25%. The shopkeeper gives a discount of 10% on the marked up price. He gives a further off-season discount of 5% on the balance. But the sales tax at 8% is charged on the remaining price. Find :

- (i) the sales tax amount which a customer has to pay.
- (ii) the final price he has to pay for the article.

2.2 VALUE ADDED TAX

Value added tax (abbreviated 'VAT') is neither a new tax nor in addition to the existing sales tax. It is the replacement of sales tax.

Value added tax is a form of sales tax only. The same sales tax is collected by State Governments. The only difference is that it is collected in stages rather than at one point from the sale of goods. In value added tax, the first seller pays the **first point** tax (to the Government) and subsequent seller (s) pays tax (to the Government) on the value added by them—leading to a total tax exactly equal to the **last point** tax (paid by consumer).

VAT is a system of collecting sales tax which reduces the scope of under evaluation and tax evasion. It provides a broad base tax system.

For example :

- (i) Let the rate of sales tax be 6%.

Suppose a trader buys a fan from a factory owner for ₹ 1000, then the tax paid by the trader (to the factory owner) = 6% of ₹ 1000 = ₹ 60. So the factory owner will pay ₹ 60 to the Government as tax on the sale of the fan.

If the trader sells the fan to a consumer for ₹ 1250, then the tax paid by the consumer (to the trader) = 6% of ₹ 1250 = ₹ 75.

Note that the dealer has added ₹ 250 in the value of the fan, so he will pay tax to the Government only on the added value *i.e.* 6% of ₹ 250 = ₹ 15.

$$\begin{aligned} \therefore \text{Total tax paid to the Government} \\ &= ₹ 60 \text{ (by factory owner)} + ₹ 15 \text{ (by trader)} \\ &= ₹ 75 = \text{tax paid by consumer.} \end{aligned}$$

Note that the Government collects the same tax at two stages.

- (ii) Let the rate of sales tax be 5%.

	Producer	→	Trader 1	→	Trader 2	→	Consumer
Sale Price	₹ 500		₹ 600		₹ 800		
	↓		↓				
Tax charged	by producer		by trader 1		by trader 2		Tax paid
	↓		↓		↓		by consumer
	₹ 25		₹ 30		₹ 40		₹ 40
Tax paid	by producer		by trader 1		by trader 2		
to Govt.	₹ 25		₹ 5		₹ 10		

$$\begin{aligned} \text{Total amount paid by the consumer} &= ₹ 800 + ₹ 40 = ₹ 840 \\ \therefore \text{Total tax collected by the Government} &= ₹ 25 + ₹ 5 + ₹ 10 = ₹ 40 \\ &= \text{tax paid by the consumer.} \end{aligned}$$

Note that the Government collects the same tax at different stages.

Some Terms Related to VAT

1. **Dealer.** Any person who buy goods for resale is known as a dealer (or trader). A dealer can be a firm or a company.

2. **Turnover.** The total amount received as sale value of goods (excluding tax) by a dealer during any fixed tax period is called **turnover**.
3. **Input tax.** The tax paid by a dealer on his/her purchases of goods for resale (subject to tax under VAT) during any fixed tax period is called **input tax**. The input tax is calculated on all taxable purchases at the applicable tax rates.
4. **Output tax.** The tax charged by a dealer on his/her sales of goods (subject to tax under VAT) during any fixed tax period is called **output tax**. The output tax is calculated on the taxable turnover at the applicable tax rates.
5. **Adjustment of output tax.** The output tax is reduced under the following circumstances :
 - (i) When a particular sale has been cancelled.
 - (ii) When a part of the goods are returned by the dealer to the previous seller.
 - (iii) When a particular sale is reduced due to offer of discount previously agreed between the dealer and the previous seller.
 - (iv) When some goods are converted into complimentary goods (i.e. as free samples) with the mutual consent of the dealer and the previous seller.
 - (v) When whole or part of the value of goods owed by the next buyer has been written off by the dealer as bad debt.

2.2.1 Computation of VAT

To compute VAT, proceed as under :

- (i) Calculate the output tax.
- (ii) Calculate the adjustment output tax (if any).
- (iii) Calculate the input tax.
- (iv) **Net tax (VAT) to be paid by the dealer during any fixed tax period**
 $= \text{output tax} - \text{adjustment output tax (if any)} - \text{input tax}.$

ILLUSTRATIVE EXAMPLES

✓ **Example 1.** Manufacturer A sells a washing machine to a trader B for ₹ 12500. Trader B sells it to a trader C at a profit of ₹ 800 and trader C sells it to a consumer at a profit of ₹ 1300. If the rate of VAT is 8%, find

- (i) the amount of tax (under VAT) received by the State Government on the sale of this machine.
- (ii) the amount that the consumer pays for the machine.

Solution. (i) Amount of tax collected by manufacturer A = 8% of ₹ 12500

$$= ₹ \left(\frac{8}{100} \times 12500 \right) = ₹ 1000.$$

Since the trader B earns a profit of ₹ 800, the value added by the dealer B = ₹ 800.

∴ Amount of VAT to be paid by B = 8% of ₹ 800 = ₹ 64.

As the trader C earns a profit of ₹ 1300, the value added by the dealer C = ₹ 1300.

∴ Amount of VAT to be paid by C = 8% of ₹ 1300 = ₹ 104.

∴ The amount of tax (under VAT) received by the Government

$$= ₹ 1000 + ₹ 64 + ₹ 104$$

$$= ₹ 1168.$$

(ii) The value of the machine paid by the consumer
 = the price charged by A + profit of B + profit of C
 = ₹ 12500 + ₹ 800 + ₹ 1300 = ₹ 14600.

Tax paid by the consumer = 8% of ₹ 14600

$$= ₹ \left(\frac{8}{100} \times 14600 \right) = ₹ 1168.$$

∴ The amount paid by the consumer = ₹ 14600 + ₹ 1168
 = ₹ 15768.

Example 2. A shopkeeper buys an article whose printed price is ₹ 4000 from a wholesaler at a discount of 20%. The rate of sales tax (under VAT) on the article is 8%. If he sells the article to a consumer at the printed price plus tax, find

- (i) the price of the article inclusive of sales tax at which the shopkeeper bought it.
- (ii) the amount of sales tax (under VAT) paid by the shopkeeper.
- (iii) the amount of tax (under VAT) received by the Government.
- (iv) the amount which the customer pays for the article.

Solution. (i) Printed price = ₹ 4000, rate of discount = 20%

$$\text{Amount of discount} = ₹ \left(4000 \times \frac{20}{100} \right) = ₹ 800.$$

∴ The price of the article which the shopkeeper paid to the wholesaler
 = ₹ 4000 - ₹ 800 = ₹ 3200.

Sales tax paid by the shopkeeper to the wholesaler

$$= 8\% \text{ of } ₹ 3200 = ₹ \left(\frac{8}{100} \times 3200 \right) = ₹ 256.$$

∴ Price of the article inclusive of sales tax at which the shopkeeper bought it
 = ₹ 3200 + ₹ 256 = ₹ 3456.

(ii) Since the shopkeeper sells the article at the printed price of ₹ 4000, the value added by the shopkeeper

$$= ₹ 4000 - ₹ 3200 = ₹ 800.$$

∴ The amount of sales tax (under VAT) paid by the shopkeeper
 = 8% of ₹ 800 = ₹ 64.

(iii) The amount of sales tax (under VAT) received by the Government

$$= ₹ 256 + ₹ 64 = ₹ 320.$$

(iv) The value of the article paid by the consumer = ₹ 4000

Sales tax paid by the consumer = 8% of ₹ 4000

$$= ₹ \left(\frac{8}{100} \times 4000 \right) = ₹ 320.$$

∴ The amount which the customer pays for the article
 = ₹ 4000 + ₹ 320 = ₹ 4320.

Example 3. The list price of an article is ₹ 3000. A shopkeeper sells the article to a consumer at the list price and charges sales tax at the prescribed rate of 8%. If the shopkeeper pays a VAT of ₹ 32 to the State Government, at what price inclusive of sales tax did the shopkeeper buy the article from the wholesaler?

Solution. Let the profit of the shopkeeper be ₹ x , then the value of the article added by the shopkeeper = ₹ x .

As the VAT paid by the shopkeeper is ₹ 32 and the rate of sales tax = 8%,

$$\therefore 8\% \text{ of } ₹ x = ₹ 32 \Rightarrow \frac{8}{100} \times x = 32 \Rightarrow x = 400.$$

\therefore The profit of the shopkeeper = ₹ 400.

\therefore The price of the article which the shopkeeper paid to the wholesaler
= ₹ 3000 – ₹ 400 = ₹ 2600.

Sales tax paid by the shopkeeper to the wholesaler on the article

$$= 8\% \text{ of } ₹ 2600 = ₹ \left(\frac{8}{100} \times 2600 \right) = ₹ 208.$$

\therefore The price of the article inclusive of sales tax which the shopkeeper paid to the wholesaler = ₹ 2600 + ₹ 208 = ₹ 2808.

Example 4. A shopkeeper buys an article whose list price is ₹ 450 at some rate of discount from a wholesaler. He sells the article to a consumer at the list price and charges sales tax at the rate of 6%. If the shopkeeper has to pay a VAT of ₹ 2.70, find the rate of discount at which he bought the article from the wholesaler.

Solution. Let the amount of discount be ₹ x .

As the shopkeeper sells the article at the list price, the profit of the shopkeeper = ₹ x .

\therefore The value of the article added by the shopkeeper = ₹ x .

As the shopkeeper pays a VAT of ₹ 2.70 and rate of sales tax = 6%,

$\therefore 6\% \text{ of } ₹ x = ₹ 2.70$

$$\Rightarrow \frac{6}{100} \times x = 2.70 \Rightarrow 6x = 270 \Rightarrow x = 45.$$

\therefore The amount of discount = ₹ 45.

$$\therefore \text{Rate of discount} = \left(\frac{45}{450} \times 100 \right) \% = 10\%.$$

Example 5. A manufacturing company M sells a computer to a distributor D for ₹ 22000 including sales tax. The distributor D sells it to a retailer R for ₹ 21750 excluding tax and the retailer sells it to a consumer for ₹ 23400 plus tax. If the rate of sales tax (under VAT) is 10%, find

(i) the cost price of the computer for the distributor D.

(ii) the amount of tax (under VAT) paid by D.

(iii) the amount of tax (under VAT) paid by R.

(iv) the amount of tax received by the State Government on the sale of this computer.

Solution. (i) Let the cost price of the computer for the distributor D be ₹ x , rate of sales tax = 10%.

$$\therefore \text{Tax charged by M} = 10\% \text{ of } ₹ x = ₹ \frac{x}{10}.$$

$$\therefore \text{The selling price of the computer by M} = ₹ x + ₹ \frac{x}{10} = ₹ \frac{11x}{10}.$$

As the selling price of the computer by M = ₹ 22000 (given), we have

$$\frac{11x}{10} = 22000 \Rightarrow x = 20000.$$

\therefore The cost price of the computer for the distributor D = ₹ 20000.

(ii) VAT collected by M = ₹ $\frac{x}{10}$ = ₹ $\frac{20000}{10}$ = ₹ 2000.

Since the distributor D sold the computer for ₹ 21750,
tax collected by D = 10% of ₹ 21750

$$= ₹ \left(\frac{10}{100} \times 21750 \right) = ₹ 2175.$$

∴ Tax to be paid by D = ₹ 2175 – ₹ 2000 = ₹ 175.

(iii) As the retailer R sold the computer for ₹ 23400,
tax collected by R = 10% of ₹ 23400

$$= ₹ \left(\frac{10}{100} \times 23400 \right) = ₹ 2340.$$

∴ Tax to be paid by R = ₹ 2340 – ₹ 2175 = ₹ 165.

(iv) The amount of tax (under VAT) received by the Government
= ₹ 2000 + ₹ 175 + ₹ 165
= ₹ 2340.

Example 6. In the tax period ended March 2009, M/S Dhani Ram Textiles purchased Silk Textiles worth ₹ 600000 taxable at 12.5%, Cotton Textiles worth ₹ 750000 taxable at 4% and Handloom Textiles worth ₹ 185000 (tax exempted). During this period, the sales turnovers for Silk Textiles, Cotton Textiles and Handloom Textiles are worth ₹ 850000, ₹ 687500 and ₹ 210000 respectively. However, the Silk Textiles worth ₹ 20000 were returned by the firm during the same period. Calculate the tax liability (under VAT) of the firm for this tax period.

Solution. Calculation of input tax :

Tax rate	Purchases	Input tax
Silk Textiles 12.5%	₹ 600000	12.5% of ₹ 600000 = ₹ 75000
Cotton Textiles 4%	₹ 750000	4% of ₹ 750000 = ₹ 30000
Handloom Textiles exempted	₹ 185000	NIL
Total Input tax		₹ 105000

Calculation of output tax :

Tax rate	Sales turnover	Output tax
Silk Textiles 12.5%	₹ 850000	12.5% of ₹ 850000 = ₹ 106250
Cotton Textiles 4%	₹ 687500	4% of ₹ 687500 = ₹ 27500
Handloom Textiles exempted	₹ 210000	NIL
Total output tax		₹ 133750

Calculation of Adjustment output tax :

Tax rate	Return	Adjustment output tax
Silk Textiles 12.5%	₹ 20000	12.5% of ₹ 20000 = ₹ 2500
Total adjustment output tax		₹ 2500

∴ Tax liability (under VAT) of the firm during the said tax period
= Total output tax – Adjustment output tax – Total input tax
= ₹ 133750 – ₹ 2500 – ₹ 105000
= ₹ 26250.

Exercise 2.2

- A manufacturing company sells a T.V. to a trader A for ₹ 18000. Trader A sells it to a trader B at a profit of ₹ 750 and trader B sells it to a consumer at a profit of ₹ 900. If the rate of sales tax (under VAT) is 10%, find
 - the amount of tax received by the Government.
 - the amount paid by the consumer for the T.V.
- A manufacturer sells a washing machine to a wholesaler for ₹ 15000. The wholesaler sells it to a trader at a profit of ₹ 1200 and the trader sells it to a consumer at a profit of ₹ 1800. If the rate of VAT is 8% find :
 - The amount of VAT received by the State Government on the sale of this machine from the manufacturer and the wholesaler.
 - The amount that the consumer pays for the machine. (2011)
- 'A' manufactures motorbikes at a cost price of ₹ 30600 each. He sells a motorbike to a dealer B, B sells it to a dealer C, C sells it to D and D sells it to a consumer. If the profit at each stage of the selling chain is ₹ 1000 and the rate of VAT is 12.5%, find
 - the total amount of VAT paid.
 - the amount which the consumer pays for the motorbike.
- A manufacturer buys raw material for ₹ 40000 and pays sales tax at the rate of 4%. He sells the ready stock for ₹ 78000 and charges sales tax at the rate of 7.5%. Find the VAT paid by the manufacturer.
- A shopkeeper buys a camera at a discount of 20% from the wholesaler, the printed price of the camera being ₹ 1600 and the rate of sales tax is 6%. The shopkeeper sells it to the buyer at the printed price and charges sales tax at the same rate. Find
 - the price at which the camera can be bought.
 - the VAT (Value Added Tax) paid by the shopkeeper. (2008)
- The printed price of an article is ₹ 60000. The wholesaler allows a discount of 20% to the shopkeeper. The shopkeeper sells the article to the customer at the printed price. Sales tax (under VAT) is charged at the rate of 6% at every stage. Find :
 - the cost to the shopkeeper inclusive of tax.
 - VAT paid by the shopkeeper to the Government.
 - the cost to the customer inclusive of tax. (2012)
- A shopkeeper bought a TV at a discount of 30% of the listed price of ₹ 24000. The shopkeeper offers a discount of 10% of the listed price to his customer. If the VAT (Value Added Tax) is 10%, find :

- (i) the amount paid by the customer.
(ii) the VAT to be paid by the shopkeeper. (2009)
8. A shopkeeper sells an article at the listed price of ₹ 1500 and the rate of VAT is 12% at each stage of sale. If the shopkeeper pays a VAT of ₹ 36 to the Government, what was the amount inclusive of tax, at which the shopkeeper purchased the article from the wholesaler? (2013)
9. A shopkeeper buys an article whose list price is ₹ 800 at some rate of discount from a wholesaler. He sells the article to a consumer at the list price and charges sales tax at the prescribed rate of 7.5%. If the shopkeeper has to pay a VAT of ₹ 6, find the rate of discount at which he bought the article from the wholesaler.
10. A manufacturing company 'P' sells a Desert cooler to a dealer A for ₹ 8100 including sales tax (under VAT). The dealer A sells it to a dealer B for ₹ 8500 plus sales tax and the dealer B sells it to a consumer at a profit of ₹ 600. If the rate of sales tax (under VAT) is 8%, find
- the cost price of the cooler for the dealer A.
 - the amount of tax received by the Government.
 - the amount which the consumer pays for the cooler.
11. A manufacturer marks an article for ₹ 5000. He sells it to a wholesaler at a discount of 25% on the marked price and the wholesaler sells it to a retailer at a discount of 15% on the marked price. The retailer sells it to a consumer at the marked price and at each stage the VAT is 8%.
Calculate the amount of VAT received by the Government from :
- the wholesaler.
 - the retailer.
12. A manufacturer listed the price of his goods at ₹ 160 per article. He allowed a discount of 25% to a wholesaler who in his turn allowed a discount of 20% on the listed price to a retailer. The rate of sales tax on the goods is 10%. If the retailer sells one article to a consumer at a discount of 5% on the listed price, then find
- the VAT paid by the wholesaler.
 - the VAT paid by the retailer.
 - the VAT received by the government.
13. In a particular tax period, Mr. Sunder Dass, a shopkeeper purchased goods worth ₹ 960000 and paid a total tax of ₹ 62750 (under VAT). During this period, his sales consisted of taxable turnover of ₹ 400000 of goods taxable at 6% and ₹ 480000 for goods taxable at 12.5%. He also sold tax exempted goods worth ₹ 95640 in the same period. Calculate his tax liability (under VAT) for this period.
14. In the tax period ended March 2008, M/S Hari Singh & Sons purchased floor tiles worth ₹ 800000 taxable at 7.5% and sanitary fittings worth ₹ 750000 taxable at 10%. During this period, the sales turnover for floor tiles and sanitary fittings are worth ₹ 840000 and ₹ 920000 respectively. However, the floor tiles worth ₹ 60000 were returned by the firm during the same period. Calculate the tax liability (under VAT) of the firm for this tax period.

CHAPTER TEST

1. Reshma paid ₹ 2484 for a leather coat inclusive of sales tax. If the leather coat is quoted at ₹ 2300, find the rate of sales tax.
2. The sales price of a washing machine, inclusive of sales tax, is ₹ 26160. If the sales tax is charged at the rate of 9% of the list price, find the list price of the washing machine.
3. Shankar buys a motorcycle for ₹ 12960 including the sales tax. If the rate of sales tax is 8%, calculate the amount of sales tax paid.
4. A cycle is available for ₹ 1712 inclusive of sales tax @ 7%. Find its list price. If the sales tax is increased to 9%, how much more does the customer pay for the cycle?
5. If Rajnish bought a cycle for ₹ 1840 which includes 8% rebate, find its basic price. If he has to pay sales tax at the rate of 7%, find the new cost of the cycle.
6. Mukerjee purchased a movie camera for ₹ 27468, which includes 10% rebate on the list price and then 9% sales tax on the remaining price. Find the list price of the movie camera.
7. A retailer buys an article at a discount of 15% on the printed price from a wholesaler. He marks up the price by 10%. Due to competition in the market, he allows a discount of 5% to a buyer. If the buyer pays ₹ 451.44 for the article inclusive of sales tax at 8%, find
 - (i) the printed price of the article.
 - (ii) the profit percentage of the retailer.
8. A shopkeeper buys an article for ₹ 2500 and marks-up its price. A customer pays ₹ 3052 for the article, inclusive of sales tax at the rate of 9%. Find the mark-up percentage on the price of the article.
9. Due to short supply in the market, a shopkeeper marked-up the price of a washing machine by 10% above the printed price. A customer paid ₹ 7128 for the washing machine inclusive of sales tax at 8%. Find the printed price of the washing machine. If the shopkeeper bought it at 15% discount, find the profit percentage of the shopkeeper.
10. The marked price of an item is ₹ 4000. The manufacturing company of the item sells it to a dealer at a discount of 15%. The dealer sells it to a consumer at a profit of ₹ 500. If the rate of sales tax (under VAT) on the item is 8%, find
 - (i) the amount of VAT collected by the company.
 - (ii) the amount of tax received by the Government.
 - (iii) the amount paid by the consumer for the item.
11. The marked price of an article is ₹ 7500. A shopkeeper sells the article to a consumer at the marked price and charges sales tax at the rate of 7%. If the shopkeeper pays a VAT of ₹ 105, find the price inclusive of sales tax of the article which the shopkeeper paid to the wholesaler.
12. A shopkeeper buys an article at a discount of 30% and pays sales tax at the rate of 6%. The shopkeeper sells the article to a consumer at 10% discount on the list price and charges sales tax at the same rate. If the list price of the article is ₹ 3000, find
 - (i) the price inclusive of sales tax paid by the shopkeeper.
 - (ii) the price paid by the consumer.
 - (iii) the VAT paid by the shopkeeper.