

# AI1110 Assignment 1

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**Q8(c):** The printed price of an air conditioner is Rs.45,000/-. The wholesaler allows a discount of 10% to the shopkeeper. The shopkeeper sells the article to the customer at a discount of 5% of the marked price. Sales tax (under VAT) is charged at the rate of 12% at every stage. Find:

- (i) VAT paid by the shopkeeper to the government.
- (ii) The total amount paid by the customer inclusive of tax.

## Solution:

According to the Table 1:

Formulae used:

$$\text{disc} = \text{MP} \times \frac{d}{100} \quad \dots \quad (1)$$

$$\text{SP} = \text{MP} - \text{disc} \quad \dots \quad (2)$$

$$t = \text{SP} \times \frac{s}{100} \quad \dots \quad (3)$$

Marked Price(MP) = Rs.45,000/-

Sales Tax(s) = 12%

Discount for shopkeeper (d1) = 10%

Discount amount for shopkeeper (disc1) =

$$45000 \times \frac{10}{100} = \text{Rs.}4500 \quad \dots \text{by (1)}$$

Selling Price for shopkeeper (SP1) =

$$45000 - 4500 = \text{Rs.}40500 \quad \dots \text{by (2)}$$

Sales Tax for shopkeeper(t1) =

$$40500 \times \frac{12}{100} = \text{Rs.}4860 \quad \dots \text{by (3)}$$

Discount for customer (d2) = 5%

Discount amount for customer(disc2) =

$$45000 \times \frac{5}{100} = \text{Rs.}2250 \quad \dots \text{by (1)}$$

Selling Price for customer (SP2) =

$$45000 - 2250 = \text{Rs.}42750 \quad \dots \text{by (2)}$$

Sales tax for customer (t2) =

$$42750 \times \frac{12}{100} = \text{Rs.}5130 \quad \dots \text{by (3)}$$

Hence,

- (i) Tax for customer - Tax for shopkeeper = VAT paid by shopkeeper to government(V)

$$= 5130 - 4860 = \boxed{\text{Rs.}270}$$

- (ii) Selling price for customer + Tax for customer = Total amount paid by customer(T)

$$= 42750 + 5130 = \boxed{\text{Rs.}47880}$$

The output of the program used for verification:

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VAT paid to government by shopkeeper = Rs.270
Amount paid by customer inclusive of tax = Rs.47880
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Table 1: Table with input and output variables, their symbols, their formulae and values:

Description	Symbol	Formula	Value(obtained/given)
Marked Price	MP	-	Rs.45000
Discount for shopkeeper	d1	-	10%
Discount amount for shopkeeper	disc1	$MP \times \frac{d1}{100}$	Rs.4500
Selling Price for shopkeeper	SP1	$MP - \text{disc1}$	Rs.40500
Sales Tax	s	-	12%
Tax amount for shopkeeper	t1	$SP1 \times \frac{s}{100}$	Rs.4860
Discount for customer	d2	-	5%
Discount amount for customer	disc2	$MP \times \frac{d2}{100}$	Rs.2250
Selling Price for customer	SP2	$MP - \text{disc2}$	Rs.42750
Tax amount for customer	t2	$SP2 \times \frac{s}{100}$	Rs.5130
VAT paid by shopkeeper to govt.	V	$t2 - t1$	Rs.270
Total Amount paid by customer	T	$SP2 + t2$	Rs.47880