PRACTICE PAPER

ICSE CLASS 10 – MATHEMATICS

Chapter 1 : Value Added Tax

STEP-BY-STEP SOLUTIONS & MARKING SCHEME · Maximum Marks: 40

Formulae used:

Tax = rate% × price on which tax is charged | Price with tax = Price × $\frac{100 + \text{rate}}{100}$

VAT = Tax charged on sale − Tax paid on purchase = rate% × (S.P. − C.P.) (same rate on both) | Discount is always on the marked price, tax is on the price after discount.

SECTION A (20 Marks)

Question 1 [8 × 1 = 8]

Part	Ans.	Working
(i)	**(a)** ₹ 72	Value added = 2,600 − 2,000 = 600; VAT = 12% of 600 = ₹ 72.
(ii)	**(b)** ₹ 5,000	Price = 5,400 × $\frac{100}{108}$ = ₹ 5,000.
(iii)	**(c)** ₹ 120	Purchase price = 360 × $\frac{100}{6}$ = 6,000. Tax on sale = 6% of 8,000 = 480. VAT = 480 − 360 = ₹ 120.
(iv)	**(a)**	Sale price = 1,500 − 20% of 1,500 = 1,200, so (A) is true. Tax is charged on the discounted sale price, not on the marked price, so (R) is false.
(v)	**(d)** ₹ 750	VAT = 12% of value added ⇒ value added = 90 × $\frac{100}{12}$ = ₹ 750.
(vi)	**(b)** ₹ 3,780	Sale price = 4,000 × 0.90 = 3,600; customer pays 3,600 × 1.05 = ₹ 3,780.
(vii)	**(c)** 8%	Tax = 2,268 − 2,100 = 168; rate = $\frac{168}{2{,}100}$ × 100 = 8%.
(viii)	**(d)**	Value added = 5,000 − 5,000 = 0, so VAT = 0 and (A) is true. (R) is also true, but it does not explain why VAT is zero (the reason is that no value is added).

Question 2 [4 + 4 + 4 = 12]

(i)

Let the marked price be **M**. Sale price after 20% discount = 0.80 M.

Amount paid = 0.80 M × $\frac{112}{100}$ = 0.896 M = 2,688 ⇒ M = $\frac{2{,}688}{0.896}$ [1]

(a) Marked price = **₹ 3,000** [1]

(b) Sale price = 0.80 × 3,000 = ₹ 2,400; tax = 12% of 2,400 = **₹ 288** (check: 2,400 + 288 = 2,688) [1]

(c) Without discount: 3,000 × 1.12 = ₹ 3,360; extra amount = 3,360 − 2,688 = **₹ 672** [1]

(ii)

(a) Discount = 12% of 5,000 = ₹ 600; price after discount = 5,000 − 600 = **₹ 4,400** [1]

(b) Sales tax = 4,664 − 4,400 = **₹ 264** [1]

(c) Rate of tax = $\frac{264}{4{,}400} \times 100 =$ **6%** [2]

(iii)

(a) Tax charged = 5% of 9,600 = **₹ 480** [1]

(b) VAT = Tax charged − Tax paid ⇒ 120 = 480 − Tax paid ⇒ Tax paid = **₹ 360** [1]

(c) 5% of C.P. = 360 ⇒ C.P. = $360 \times \frac{100}{5} =$ **₹ 7,200** [1]

(d) Price paid including tax = 7,200 + 360 = **₹ 7,560** [1]

SECTION B (20 Marks) — any two questions

Question 3 [3 + 3 + 4 = 10]

(i)

Let the listed price be **L**.

After 10% discount: 0.90 L. After a further 5%: 0.90 L × 0.95 = 0.855 L.

Amount paid = 0.855 L × 1.12 = 0.9576 L = 38,304 [1]

(a) L = $\frac{38{,}304}{0.9576} =$ **₹ 40,000** [1]

(b) Price before tax = 0.855 × 40,000 = ₹ 34,200; tax = 38,304 − 34,200 = **₹ 4,104** (check: 12% of 34,200 = 4,104) [1]

(ii)

Transportation = 20% of 7,500 = ₹ 1,500; total cost = 7,500 + 1,500 = ₹ 9,000.

(a) Marked price = 130% of 9,000 = **₹ 11,700** [1]

Discount = 10% of 11,700 = ₹ 1,170; sale price = ₹ 10,530.

(b) Profit = 10,530 − 9,000 = ₹ 1,530; profit % = $\frac{1{,}530}{9{,}000} \times 100 =$ **17%** [1]

(c) Tax = 8% of 10,530 = ₹ 842.40; customer pays = 10,530 + 842.40 = **₹ 11,372.40** [1]

(iii)

Let the price before tax be **P** and the present rate be **r%**.

Increasing the rate by 4 percentage points adds 4% of P to the price paid.

(a) 4% of P = 640 ⇒ P = $640 \times \frac{100}{4} =$ **₹ 16,000** [2]

(b) Present tax = 17,600 − 16,000 = ₹ 1,600; r = $\frac{1{,}600}{16{,}000} \times 100 =$ **10%** [1]

(c) New rate = 14%; new price = 16,000 × 1.14 = **₹ 18,240** (check: 18,240 − 17,600 = 640) [1]

Question 4 [3 + 3 + 4 = 10]

(i)

Cost of 30 articles = 30 × 480 = ₹ 14,400; tax paid = 5% of 14,400 = ₹ 720 [1]

Sale of 30 articles = 30 × 650 = ₹ 19,500; tax charged = 12% of 19,500 = ₹ 2,340 [1]

VAT = 2,340 − 720 = **₹ 1,620** [1]

(ii)

Value added = 18,000 − 14,000 = ₹ 4,000. Same rate ⇒ VAT = r% of value added.

(a) $\frac{r}{100} \times 4{,}000 = 320$ ⇒ r = **8%** [2]

(b) Tax charged = 8% of 18,000 = ₹ 1,440; customer pays = 18,000 + 1,440 = **₹ 19,440** [1]

(Check: tax paid by dealer = 8% of 14,000 = 1,120; VAT = 1,440 − 1,120 = 320 ✓)

(iii)

(a) C.P. (excluding tax) = $20{,}160 \times \frac{100}{112}$ = **₹ 18,000**; tax paid = 20,160 − 18,000 = ₹ 2,160 [1]

(b) S.P. = 130% of 18,000 = **₹ 23,400** [1]

(c) Tax charged = 12% of 23,400 = ₹ 2,808; VAT = 2,808 − 2,160 = **₹ 648** [1]

(d) Customer pays = 23,400 + 2,808 = **₹ 26,208** [1]

Question 5 [3 + 3 + 4 = 10]

(i)

Wholesaler: C.P. = 12,000; S.P. = 125% of 12,000 = ₹ 15,000.

(a) VAT = 10% of (15,000 − 12,000) = **₹ 300** [1]

Retailer: C.P. = 15,000; S.P. = 120% of 15,000 = ₹ 18,000.

(b) VAT = 10% of (18,000 − 15,000) = **₹ 300** [1]

(c) Consumer pays = 18,000 + 10% of 18,000 = **₹ 19,800** [1]

(ii)

Rate = 10%; VAT at each stage = 10% of (S.P. − C.P.).

Stage	C.P. (excl. tax)	S.P. (excl. tax)	Value added	VAT
Manufacturer	4,000	7,000	3,000	₹ 300
Wholesaler	7,000	9,000	2,000	₹ 200
Retailer	9,000	11,000	2,000	₹ 200

(a) VAT paid: manufacturer **₹ 300**, wholesaler **₹ 200**, retailer **₹ 200** [2]

(b) Total VAT = 300 + 200 + 200 = **₹ 700**. Total value added = 11,000 − 4,000 = ₹ 7,000 and 10% of 7,000 = ₹ 700. Hence they are equal. ✓ [1]

(iii)

Retailer: S.P. = ₹ 30,000; VAT = 8% of (S.P. − C.P.) = 640.

(a) S.P. − C.P. = $640 \times \frac{100}{8} = 8{,}000$ ⇒ C.P. of retailer = 30,000 − 8,000 = **₹ 22,000** [2]

The retailer's C.P. is the wholesaler's S.P. = ₹ 22,000, so the wholesaler's C.P. = 22,000 − 5,000 = ₹ 17,000.

(b) VAT paid by wholesaler = 8% of (22,000 − 17,000) = 8% of 5,000 = **₹ 400** [1]

(c) Amount paid to manufacturer = 17,000 + 8% of 17,000 = 17,000 + 1,360 = **₹ 18,360** [1]

Question 6 [3 + 3 + 4 = 10]

(i)

(a) Rate on purchases = $\frac{42{,}000}{6{,}00{,}000} \times 100$ = **7%** [1]

(b) Tax at 5% = 5% of 2,40,000 = ₹ 12,000; tax at 12% = 12% of 3,00,000 = ₹ 36,000; exempt sales = nil. Total tax charged = **₹ 48,000** [1]

(c) Tax liability = 48,000 − 42,000 = **₹ 6,000** [1]

(ii)

Let the marked price of A be x and that of B be y.

$x + y = 9{,}000$ …(1) and $0.05x + 0.12y = 639$ …(2) [1]

From (1), $x = 9{,}000 - y$. Put in (2): $0.05(9{,}000 - y) + 0.12y = 639 \Rightarrow 450 + 0.07y = 639 \Rightarrow y = 189 \div 0.07 = 2{,}700$ [1]

x = 9,000 − 2,700 = 6,300. Marked price of A = **₹ 6,300**, of B = **₹ 2,700** (check: 315 + 324 = 639 ✓) [1]

(iii)

Discount to shopkeeper = 20% of 15,000 = ₹ 3,000; price before tax = ₹ 12,000.

(a) Tax paid = 12.5% of 12,000 = ₹ 1,500; price paid = 12,000 + 1,500 = **₹ 13,500** [1]

Customer's discount = 8% of 15,000 = ₹ 1,200; sale price = ₹ 13,800. Tax charged = 12.5% of 13,800 = ₹ 1,725.

(b) VAT = 1,725 − 1,500 = **₹ 225** [1]

(c) Customer pays = 13,800 + 1,725 = **₹ 15,525** [1]

(d) Profit = 13,800 − 12,000 = ₹ 1,800; profit % = $\frac{1{,}800}{12{,}000} \times 100$ = **15%** [1]

— End of Solutions —