

UNIT
5

CONSUMER
MATHEMATICS

SHORT QUESTIONS

Q.1- Differentiate direct and indirect taxes.

Ans. The taxes charged on income, Property and Profits in the form of income tax, Property tax etc are named as direct tax. Whereas the taxes charged on duties, motor vehicle taxes, goods and services taxes, sales tax and value added tax etc are called indirect taxes.

Q.2- The marked Price of a T.V is Rs.18000. Calculate sales tax @ 16%.

Solution:- Marked Price = Rs.18000

$$\text{Tax} = 16\% \text{ of } 18000 = \frac{16}{100} \times 18000$$

Sales Tax = Rs.2880 Ans.

Q.3- Define Property tax.

Ans. Property tax is charged on the owner of land, houses, flats or buildings at a standard rate of 16% on the annual value of the Property.

Q.4 Write a "note" on income tax.

Ans. Income tax is charged on all kinds of incomes during the year from 1st July to 30th of June. This tax is not charged on exceeding amount.

Q.5- Define "tax".

Ans. Money that must be paid to the state, charged as a Proportion of income and Profits or value added to the cost of some goods and services is called a tax.

Q.6- The Price of a car is Rs.500,000. The buyer pays excise duty @150%. How much amount has to pay to purchase the car.

Solution:- Price = Rs.500,000

Excise duty = 150% of Price

$$= \frac{15}{100} \times 500,000 = 7,50,000$$

He has to Pay = Rs.(5,00,000 + 7,50,000) = Rs(12,50,000) Ans.

SOLVED EXERCISES

EXERCISE 5.1

Q.1- The price of a bicycle is Rs. 3500. If 16% sales tax is charged, then calculate the amount of sales tax on 50 such bicycles.

Solution:-

Price of one bicycle = Rs.3500

Price of 50 bicycles = Rs.(50 × 3500) = Rs.175000

Sales Tax = 16% of Rs.175000

$$= \frac{16}{100} \times 175000 = \text{Rs.}28000$$

Q.2- If the price of an air conditioner is Rs. 40,000, then work out the amount of sales tax on it at the rate of 16%. Also calculate the price of air conditioner with sales tax.

Solution:-

Price of A.C (Excluded sales tax) = Rs.40,000

Price of A.C = 40000

Sales Tax = 16% of Rs. 40000

$$= \frac{16}{100} \times 40000$$

$$= \text{Rs.}6400$$

$$\begin{aligned}\text{Price of A.C with Sales tax} &= 40000 + 6400 \\ &= \text{Rs. } 46400\end{aligned}$$

Q.3- The price of two cars of 1300 cc and 1600 cc without excise duty are 6,00,000 and Rs. 8,00,000 respectively. If the excise duty on these two are 200% and 250% respectively. Find the prices of the two cars inclusive duties.

Solution:-

For the 1300 CC Car

Price without excise duty = Rs. 6,00,000

Excise duty = 200% of Rs. 6,00,000

$$= \frac{200}{100} \times 6,00,000 = 12,00,000$$

Price (Included excise duty) = Rs. (6,00,000 + 12,00,000)
= Rs. 18,00,000 Ans.

For the Car of 1600CC

Price (without duty) = 8,00,000

$$\text{Excise duty} = \frac{250}{100} \times 8,00,000 = 20,00,000$$

Price (Included excise duty) = Rs. (8,00,000 + 20,00,000)
= Rs. 28,00,000 Ans.

Q.4- The annual price of a house and price of land is Rs. 15,00,000 and Rs. 20,00,000 respectively. Find the property tax on each of these two at the rate of 16%.

Solution:-

Annual Price of house = Rs. 15,00,000

$$\text{Property tax @16\%} = \frac{16}{100} \times 15,00,000 = \text{Rs. } 2,40,000 \text{ Ans.}$$

Annual Price of land = Rs. 20,00,000

$$\text{Property tax @16\%} = \frac{16}{100} \times 20,00,000 = \text{Rs. } 3,20,000 \text{ Ans.}$$

Q.5- The total taxable income of two persons is Rs.2,50,000 and Rs. 3,10,000 respectively. Work out the income tax for each of them @ 4.5%.

Solution:- For the 1st Person

Income Tax = 4.5% of taxable income.

$$\begin{aligned} &= \frac{4.5}{100} \times 2,50,000 \\ &= \text{Rs.}11250 \end{aligned}$$

For the 2nd Person.

Income Tax = 4.5% of taxable income.

$$\begin{aligned} &= \frac{4.5}{100} \times 3,10,000 \\ &= \text{Rs.}13950 \text{ Ans.} \end{aligned}$$

Q.6- The total taxable income of a person is Rs.4,30,000. If he is given rebate Rs. 3000 on the tax chargeable, then work out the amount he has to pay as an income tax @ 4.5%.

Solution:-

Income Tax = 4.5% of Income.

$$= 4.5\% \text{ of } 4,30,000$$

$$= \frac{4.5}{100} \times 4,30,000 = \text{Rs.}19350$$

Rebate given to him = Rs.3000

Payable income tax = Rs.(19350 - 3000)

$$= \text{Rs.}16350 \text{ Ans.}$$

Q.7- If the total annual income of a person is Rs.6,25,000 with exemption of amount of Rs. 1,50,000, then find the tax chargeable @ 4.5%.

Solution:-

Total annual Income = Rs.6,25,000

Exemption of amount = Rs.1,50,000

$$\begin{aligned}\text{Tax able income} &= \text{Rs.}(6,25,000 - 1,50,000) \\ &= \text{Rs.}4,75,000\end{aligned}$$

$$\text{Tax @4.5\%} = \frac{4.5}{100} \times 4,75,000 = \text{Rs.}21375 \text{ Ans.}$$

Q.8- The total income of a person is Rs. 5,25,000. Whereas the exemption is Rs. 1,50,000. Work out the tax payable @ 4.5% along with the income tax payable, if Rs. 10,000 has already been deducted at source as income tax.

Solution:-

$$\text{Total Income} = \text{Rs.}5,25,000$$

$$\text{Exemption} = \text{Rs.}1,50,000$$

$$\begin{aligned}\text{Tax able income} &= \text{Rs.}(5,25,000 - 1,50,000) \\ &= \text{Rs.}3,75,000\end{aligned}$$

$$\text{Tax @4.5\%} = \frac{4.5}{100} \times 3,75,000 = \text{Rs.}16875$$

$$\text{Deduction} = \text{Rs.}10000$$

$$\text{Tax Payable} = \text{Rs.}(16875 - 10000) = \text{Rs.}6875 \text{ Ans.}$$

EXERCISE 5.2

Q.1- In the following the gas meter reading has been given. Complete the gas bills with the help of the slabs given in the unit. Also include the meter rent and GST.

$$(i) \quad 3.0756 \text{ Hm}^3 \quad (ii) \quad 4.285 \text{ Hm}^3$$

$$(iii) \quad 2.796 \text{ Hm}^3 \quad (iv) \quad 1.378 \text{ Hm}^3$$

$$(v) \quad 5.235 \text{ Hm}^3 \quad (vi) \quad 4.665 \text{ Hm}^3$$

Solution:-

$$(i) \quad \text{Meter reading} = 3.0756 \text{ Hm}^3$$

$$1 \text{ Hm}^3 = 3.25 \text{ M M B T U (nearly)}$$

Thus

$$\begin{aligned} \text{Meter reading} &= 3.0756 \text{ Hm}^3 \\ &= 3.0756 \times 3.25 \\ &= 9.9957 \text{ M M B T U (nearly)} \end{aligned}$$

Now consider the table.

Hm ³	MMBTU	Rate Rupee/MMBTU	Price (Rs) MMBTU × Rate
First 0.5 Hm ³	0.5 × 3.25 = 1.625	Rs. 80.65	1.625 × 80.65 = 131.06
Next 0.5 Hm ³	1.625	Rs. 84.45	137.23
Next 1.0 Hm ³	3.25	Rs. 153.73	499.62
Next 1.0 Hm ³	3.25	Rs. 325.48	1057.81
Next 0.0756 Hm ³	0.2457	Rs. 423.42	104.03
Total = 3.0756 Hm ³	9.9957		Total = 1929.75

$$\text{Total Price of gas} = 1929.75$$

$$\text{Meter Rent} = 20.00$$

$$\text{Total} = 1949.75$$

$$\begin{aligned} \text{G.S. Tax @ 16\%} &= \frac{16}{100} \times 1949.75 \\ &= 311.96 \end{aligned}$$

$$\text{Amount of Bill} = 1949.75 + 311.96 = 2261.71$$

$$= 2261.71 \text{ Ans.}$$

(ii) Meter reading = 4.285 Hm³

We Know that 1 Hm³ = 3.25 M M B T U (nearly)

Thus

$$\begin{aligned} \text{Meter reading} &= 4.285 \text{ Hm}^3 \\ &= 4.285 \times 3.25 \\ &= 13.92625 \text{ M M B T U (nearly)} \end{aligned}$$

Now consider the table.

Hm ³	MMBTU	Rate Rupee/MMBTU	Price (Rs) MMBTU × Rate
First 0.5 Hm ³	0.5 × 3.25 = 1.625	Rs. 80.65	1.625 × 80.65 = 131.06
Next 0.5 Hm ³	1.625	Rs. 84.45	137.23
Next 1.0 Hm ³	3.25	Rs. 153.73	499.62
Next 1.0 Hm ³	3.25	Rs. 325.48	1057.81
Next 1.0 Hm ³	3.25	Rs. 423.42	1376.12
Next 0.285 Hm ³	0.92625	Rs. 550.44	509.83
Total = 4.285 Hm ³			Total = 3711.67

Total Price of gas = 3711.67

Meter Rent = 20.00

Total = 3731.67

G.S. Tax @ 16% = $\frac{16}{100} \times 3731.67$
= 597.07

Amount of Bill = 3731.67 + 597.07 = 4328.74
= 4328.74 Ans.

(iii) Meter reading = 2.796 Hm³
1 Hm³ = 3.25 M M B T U (nearly)

Thus

Meter reading = 2.796 Hm³ = 3.25 × 2.796
= 9.087 M M B T U (nearly)

Now consider the table.

Hm ³	MMBTU	Rate Rupee/MMBTU	Price (Rs) MMBTU × Rate
First 0.5 Hm ³	0.5 × 3.25 = 1.625	Rs. 80.65	1.625 × 80.65 = 131.06

Next 0.5 Hm^3	1.625	Rs.84.45	137.23
Next 1.0 Hm^3	3.25	Rs.153.73	499.62
Next 0.796 Hm^3	2.587	Rs.325.48	842.02
Total $= 2.796 \text{ Hm}^3$			Total = 1609.93

Gas charges = Rs.1609.93

Meter Rent = 20.00

Total = 1629.93

$$\begin{aligned} \text{G.S. Tax @ 16\%} &= \frac{16}{100} \times 1629.93 \\ &= 260.79 \end{aligned}$$

$$\begin{aligned} \text{Amount of Bill} &= 1629.93 + 260.79 = \text{Rs.1890.72} \\ &= \text{Rs.1890.72 Ans.} \end{aligned}$$

(vi) Meter reading = 1.378 Hm^3
 $1 \text{ Hm}^3 = 3.25 \text{ M M B T U (nearly)}$

Thus

$$\begin{aligned} \text{Meter reading} &= 1.378 \text{ Hm}^3 \\ &= 1.378 \times 3.25 \\ &= 4.4785 \text{ M M B T U (nearly)} \end{aligned}$$

Now consider the table.

Hm^3	MMBTU	Rate Rupee/MMBTU	Price (Rs) MMBTU \times Rate
First 0.5 Hm^3	0.5×3.25 $= 1.625$	Rs.80.65	1.625×80.65 $= 131.06$
Next 0.5 Hm^3	1.625	Rs.84.45	137.23
Next 0.378 Hm^3	1.2285	Rs.153.73	188.86
Total $= 1.378 \text{ Hm}^3$			Total = 457.15

Gas charges = Rs.457.15

$$\text{Meter Rent} = 20.00$$

$$\text{Total} = \text{Rs. } 477.15$$

$$\text{G.S. Tax @ 16\%} = \frac{16}{100} \times 477.15 = 76.34$$

$$\begin{aligned} \text{Total Amount of Bill} &= 477.15 + 76.34 = 553.49 \\ &= 553.49 \text{ Ans.} \end{aligned}$$

(v) Meter reading = 5.235 Hm^3

We Know that $1 \text{ Hm}^3 = 3.25 \text{ MMBTU}$ (nearly)

$$\begin{aligned} \text{So Meter reading} &= 5.235 \text{ Hm}^3 \\ &= 5.235 \times 3.25 \text{ MMBTU} \\ &= 17.01375 \text{ MMBTU} \end{aligned}$$

Now consider the table.

Hm^3	MMBTU	Rate Rupee/MMBTU	Price (Rs) $\text{MMBTU} \times \text{Rate}$
First 0.5 Hm^3	0.5×3.25 $= 1.625$	Rs. 80.65	1.625×80.65 $= 131.06$
Next 0.5 Hm^3	1.625	Rs. 84.45	137.23
Next 1.0 Hm^3	3.25	Rs. 153.73	499.62
Next 1.0 Hm^3	3.25	Rs. 325.48	1057.81
Next 1.0 Hm^3	3.25	Rs. 423.42	1376.12
Next 1.0 Hm^3	3.25	Rs. 550.44	1788.93
Next 0.235 Hm^3	0.76375	Rs. 730.17	557.67
Total $= 5.235 \text{ Hm}^3$			Total = 5548.44

$$\text{Gas charges} = 5548.44$$

$$\text{Meter Rent} = 20.00$$

$$\text{Total} = 5568.44$$

$$\text{G.S. Tax @ 16\%} = \frac{16}{100} \times 5568.44 = \text{Rs. } 890.95$$

(vi) Meter reading = 4.665 Hm³
 Meter reading = 3.25 M M B T U (nearly)
 So Meter reading = 4.665 Hm³ = 3.25 × 4.665
 = 15.16125 M M B T U (nearly)

Now consider the table:

Hm ³	MMBTU Rate	Rupe/MBTU	MMBTU × Rate
First 0.5 Hm ³	0.5 × 3.25	Rs. 80.65	= 1.625 × 80.65 = 131.06
Next 0.5 Hm ³	1.625	Rs. 84.45	137.23
Next 1.0 Hm ³	3.25	Rs. 153.73	499.62
Next 1.0 Hm ³	3.25	Rs. 325.48	1057.81
Next 1.0 Hm ³	3.25	Rs. 423.42	1376.12
Next 0.665 Hm ³	2.16125	Rs. 550.44	1189.64
Total = 4.665 Hm ³			Total = 4391.48

Gas charges = 4391.48

Meter Rent = 20.00

Total = 4411.48

G.S.Tax @ 16% = $\frac{16}{100} \times 4411.48 = 705.84$

Total amount of Bill = 4411.48 + 705.84 = Rs. 5117.32 Ans.

Q.2- In the following the number of units consumed while using electricity is given. Complete the Electricity bills, including the items as well as shown in the solved example of electricity bill.

Solution:-

(i) Number of Units consumed = 315 Units

Cost of first 100 Units @ Rs. 2.65 = 100 × 2.65

$$= \text{Rs.} 265.00$$

$$\text{Cost of next 200 Units @Rs.} 3.64 = 200 \times 3.64$$

$$= \text{Rs.} 728.00$$

$$\text{Cost of remaining 15 Units} = 15 \times 6.15$$

$$= \text{Rs.} 92.25$$

$$\text{Total Cost of Electricity} = \text{Rs.} (265 + 728 + 92.25)$$

$$= \text{Rs.} 1085.28 \text{ --- (i)}$$

$$\text{Exise duty @} 1.5\% = \frac{1.5}{100} \times 1085.28$$

$$= \text{Rs.} 16.28 \text{ --- (ii)}$$

$$\text{Electricity duty} = \text{Rs.} 19.04 \text{ --- (iii)}$$

$$\text{PTV fee} = \text{Rs.} 25.00 \text{ --- (iv)}$$

$$\text{Income Tax} = \text{Rs.} 27.50 \text{ --- (v)}$$

$$\text{Adding } i + ii + iii + iv + v$$

$$= \text{Rs.} 1173.10 \text{ Ans.}$$

$$(ii) \text{ Number of Units} = 210$$

$$\text{Cost of first 100 Units @Rs.} 2.65 = 100 \times 2.65$$

$$= \text{Rs.} 265.00$$

$$\text{Cost of next 110 Units} = 110 \times 3.64$$

$$= \text{Rs.} 400.4$$

$$\text{Total Cost of Electricity} = \text{Rs.} (265 + 400.4)$$

$$= \text{Rs.} 665.40 \text{ --- (i)}$$

$$\text{Exise duty @} 1.5\% = \frac{1.5}{100} \times 665.4$$

$$= \text{Rs.} 9.98 \text{ --- (ii)}$$

$$\text{Electricity duty} = \text{Rs.} 19.04 \text{ --- (iii)}$$

$$\text{PTV fee} = \text{Rs.} 25.00 \text{ --- (iv)}$$

$$\text{Income Tax} = \text{Rs.} 27.50 \text{ --- (v)}$$

$$\text{Adding } i + ii + iii + iv + v$$

$$\text{Total Bill} = \text{Rs.} 736.94 \text{ Ans.}$$

- (iii) Number of Units consumed = 375 Units
 Cost of first 100 Units @Rs.2.65 = 100×2.65
 $= \text{Rs.}265.00$
 Cost of next 200 Units @Rs.3.64 = 200×3.64
 $= \text{Rs.}728.00$
 Cost of remaining 75 Units = 75×6.15
 $= \text{Rs.}461.25$
 Total Cost of Electricity = Rs.1454.25 ... (i)
 Exise duty @1.5% = $\frac{1.5}{100} \times 1454.25$
 $= \text{Rs.}21.81$ ---(ii)
 Electricity duty = Rs.19.04 ---(iii)
 PTV fee = Rs.25.00 --- (iv)
 Income Tax = Rs.27.50 --- (v)
 Adding $i + ii + iii + iv + v$
 Total Bill = Rs.1547.55 Ans.

- (iv) Units consumed = 290
 Cost of first 100 Units @Rs.2.65 = 100×2.65
 $= \text{Rs.}265.00$
 Cost of remaining 190 Units = 190×3.64
 $= \text{Rs.}691.6$
 Total Cost of Electricity = Rs.956.60 ---(i)
 Excise duty @1.5% = $\frac{1.5}{100} \times 956.60$
 $= \text{Rs.}14.35$ ---(ii)
 Electricity duty = Rs.19.04 ---(iii)
 PTV fee = Rs.25.00 ---(iv)
 Income Tax = Rs.27.50 ---(v)
 Adding $i + ii + iii + iv + v$
 $= \text{Rs.}1042.49$ Ans.

Q.3- In the following the number of calls made is given. Complete the telephone bill including the items; Call rate Rs. 5 per call, CED @ 15%, W.H tax @ 4%.

- (i) 530 (ii) 640 (iii) 750
 (iv) 270 (v) 480 (vi) 315

Solution:-

(i) Number of Calls = 530

Call charges @ Rs.5 Per Call

$$= 530 \times 5 = \text{Rs.}2650$$

$$\text{CED @15\%} = \frac{15}{100} \times 2650 = \text{Rs.}397.50$$

$$\text{W.H Tax @4\%} = \frac{4}{100} \times 2650 = \text{Rs.}106$$

$$\begin{aligned} \text{Total amount Payable} &= \text{Rs.}2650 + \text{Rs.}397.50 + \text{Rs.}106 \\ &= \text{Rs.}3153.50 \text{ Ans.} \end{aligned}$$

(ii) Number of Calls = 640

Call charges @ Rs.5 Per Call

$$= 640 \times 5 = \text{Rs.}3200$$

$$\text{CED @15\%} = \frac{15}{100} \times 3200 = \text{Rs.}480$$

$$\text{W.H Tax @4\%} = \frac{4}{100} \times 3750 = \text{Rs.}150.00$$

$$\begin{aligned} \text{Total amount Payable} &= \text{Rs.}(3750 + 562.50 + 150.00) \\ &= \text{Rs.}4462.50 \text{ Ans.} \end{aligned}$$

(iii) Number of Calls = 750

Call charges @ Rs.5 Per Call = 750×5

$$= \text{Rs.}3750 \dots (i)$$

$$\text{CED @15\%} = \frac{15}{100} \times 3750$$

$$= \text{Rs.}562.50 \dots (ii)$$

$$\text{W.H Tax @4\%} = \frac{4}{100} \times 3750$$

$$= \text{Rs.}150.00$$

$$\text{Total amount Payable} = \text{Rs.}(3750 + 562.50 + 150.00)$$

$$= \text{Rs.}4462.50 \text{ Ans.}$$

(iv) Number of Calls = 270

$$\text{Call charges @ Rs.5 Per Call} = 270 \times 5 = \text{Rs.}1350$$

$$\text{CED @15\%} = \frac{15}{100} \times 1350 = \text{Rs.}202.50$$

$$\text{W.H Tax @4\%} = \frac{4}{100} \times 1350 = \text{Rs.}54.00$$

$$\text{Total amount Payable} = \text{Rs.}(1350 + 202.50 + 54.00)$$

$$= \text{Rs.}1606.50 \text{ Ans.}$$

(v) Number of Calls = 480

$$\text{Call charges @ Rs.5 Per Call}$$

$$= 480 \times 5 = \text{Rs.}2400$$

$$\text{CED @15\%} = \frac{15}{100} \times 2400 = \text{Rs.}360$$

$$\text{W.H Tax @4\%} = \frac{4}{100} \times 2400 = \text{Rs.}96$$

$$\text{Total amount Payable} = \text{Rs.}(2400 + 360 + 96)$$

$$= \text{Rs.}2856 \text{ Ans.}$$

(vi) Number of Calls = 315

$$\text{Call charges @ Rs.5 Per Call} = 315 \times 5 = \text{Rs.}1575$$

$$\text{CED @15\%} = \frac{15}{100} \times 1575 = \text{Rs.}236.25$$

$$\text{W.H Tax @4\%} = \frac{4}{100} \times 1575 = \text{Rs.}63.00$$

$$\text{Total amount Payable} = \text{Rs.}(1575 + 236.25 + 63)$$

$$= \text{Rs.}1874.25 \text{ Ans.}$$

EXERCISE 5.3

- Q.1-** A lady worker works a six-day week. She starts work at 7.00 am and finishes at 4pm. She has 15 minutes break in the morning and 45 minutes break in the afternoon. How long does she actually work in a week and how much she is paid, if the rate of payment is Rs.40 per hour?

Solution:-

As she starts at 7.00 am and ends at 4.00 pm. So

Daily working hours = 9 hours

Daily break = 1 hour

Daily hours to be paid for = 8

Weekly hours = $6 \times 8 = 48$ Ans.

Payment @Rs.40 per hours = $48 \times 40 = \text{Rs.}1920$ Ans.

- Q.2-Khalid works 6 day-weeks. Find his gross monthly wage, if his rate of pay is Rs. 200 per day.**

Solution:-

Weekly working days = 6

Monthly working days = $4 \times 6 = 24$

Gross monthly wage @ Rs.200 per day.

$= 24 \times 200 = \text{Rs.}4800$ Ans.

- Q.3-** Aslam gets paid Rs.70 per hour for his normal working 8 hours daily (6 day week). The rate of over time is 1.5 of Rs. 70 per hour. If he works 40 hours as overtime, then work out his gross monthly pay.

Solution:-

Daily working hours = 8

Weekly working hours = $6 \times 8 = 48$

Monthly working hours = $4 \times 48 = 192$

Payment for normal work = $192 \times 70 = \text{Rs.}13440$

Over time of 40 hours @ 1.5×70 per hour

$$= 1.5 \times 70 \times 40 = \text{Rs.}4200$$

Gross monthly pay = Rs.(13440 + 4200) = Rs.17640 Ans.

Q.4- Calculate the gross monthly pay of a person, if his basic pay is Rs.18000, house rent allowances is Rs.3500, dearness allowances is Rs.3000, conveyance allowance is Rs.1500 and medical allowance is Rs.500.

Solution:-

$$\begin{aligned} \text{Gross monthly pay} &= \text{Basic pay} + \text{House rent allowance} \\ &+ \text{Denner allowance} + \text{Conveyance allowance} \\ &+ \text{Medical allowance} \\ &= \text{Rs.}(18000 + 3500 + 3000 + 1500 + 500) = \text{Rs.}26500 \text{ Ans.} \end{aligned}$$

Q.5- If gross pay of a person is Rs.45,000, then calculate his net take home salary, after deductions of Rs.400 as income tax, Rs.1200 as benevolent fund, Rs.1500 as G.P fund and Rs.400 as group insurance.

Solution:-

$$\text{Gross pay} = \text{Rs.}45,000$$

$$\begin{aligned} \text{Deductions} &= \text{Income Tax} + \text{benevolent fund} \\ &+ \text{G.P fund} + \text{Group insurance} \end{aligned}$$

$$= \text{Rs.}(400 + 1200 + 1500 + 400) = \text{Rs.}3500$$

$$\begin{aligned} \text{Net take home salary} &= \text{Gross Pay} - \text{Deductions} \\ &= \text{Rs.}(45000 - 3500) = \text{Rs.}41500 \text{ Ans.} \end{aligned}$$

Q.6- Noman works in a factory where the basic hourly rate is Rs.50 for a 35 hour week. An over time is paid at time and - a-half. How much will he earn in a week when he works for:

(i) 38 hours (ii) 48 hours (iii) 50 hours

Solution:-

(i) Number of hours = 38

Basic hourly rate for 35 hours = Rs.50 per hour

$$\begin{aligned}\text{Payment for 35 hours} &= 35 \times 50 \\ &= \text{Rs.}1750\end{aligned}$$

$$\begin{aligned}\text{Payment for 3 hours} &= 1.5 \times 50 \times 3 \\ &= \text{Rs.}225\end{aligned}$$

$$\begin{aligned}\text{Gross Payment} &= \text{Rs.}(1750 + 225) \\ &= \text{Rs.}1975 \text{ Ans.}\end{aligned}$$

(ii) Number of hours = 48

$$\begin{aligned}\text{Payment for 35 hours} &= 35 \times 50 \\ &= \text{Rs.}1750\end{aligned}$$

$$\begin{aligned}\text{Payment for 13 hours} &= 1.5 \times 50 \times 13 \\ &= \text{Rs.}975\end{aligned}$$

$$\begin{aligned}\text{Gross Payment} &= \text{Rs.}(1750 + 975) \\ &= \text{Rs.}2725 \text{ Ans.}\end{aligned}$$

(iii) Number of hours = 50

$$\begin{aligned}\text{Payment for 35 hours} &= 35 \times 50 \\ &= \text{Rs.}1750\end{aligned}$$

$$\begin{aligned}\text{Payment for 15 hours} &= 1.5 \times 15 \times 50 \\ &= \text{Rs.}1125\end{aligned}$$

$$\begin{aligned}\text{Gross Payment} &= \text{Rs.}(1750 + 1125) \\ &= \text{Rs.}2875 \text{ Ans.}\end{aligned}$$

Q.7 Abdullah's pay slip showed that he had worked 6 hours over time in addition to his basic 36 hours week. If his basic rate of pay is Rs.60 and over time is paid at time and a-half. Find his gross pay for the month.

Solution:-

$$\text{Payment for 36 hours} = 36 \times 60 = \text{Rs.}2160$$

$$\text{Payment for 6 hours} = 1.5 \times 60 \times 6 = \text{Rs.}540$$

$$\text{Gross Pay for the week} = \text{Rs.}(2160 + 540) = \text{Rs.}2700$$

$$\text{Gross Pay for the month} = 4 \times 2700$$

$$= \text{Rs.}10800 \text{ Ans.}$$

Review Exercise-5

Q.1- Encircle the correct answer.

(i) Money that must be paid to the state charged as proportion of income and profit added to cost of some goods and services is called a

- (a) tax (b) excise
(c) property tax (d) income tax

(ii) The taxes which are charged on income, property and profits in the form of income tax, property tax and profits etc is called

- (a) tax (b) direct tax
(c) property tax (d) income tax

(iii) Taxes of the form of duties, motor vehicle taxes are called

- (a) indirect tax (b) direct tax
(c) property tax (d) income tax

(iv) The tax in addition to the price of the article is called

- (a) tax (b) sales tax
(c) income tax (d) excise duty

(v) The form of a tax which the buyer pays on a manufactured item at the time of purchase is called

- (a) excise duty (b) tax
(c) income tax (d) sales tax

(vi) The tax charged on the owner of a land, house flats or building is called

- (a) property tax (b) income tax
(c) direct tax (d) indirect tax

(vii) The tax charged on all the taxable income is called

- (a) sales tax (b) direct tax
(c) income tax (d) excise duty

Ans:

(i) (a)	(ii) (b)	(iii) (a)	(iv) (b)
(v) (a)	(vi) (a)	(vii) (c)	

Q.2- Fill in the blanks.

- (i) Money that must be paid to the state charged as a proportion of income and profits added to the cost of some goods and services is called a _____
- (ii) The taxes which are charged on income, property and profits in the form of income tax, property tax and profit etc is called a _____
- (iii) Taxes of the form of duties, motor vehicle taxes, goods and services are called _____
- (iv) The tax in addition to the price of the article is called as _____
- (v) The form of a tax which the buyer pay on a manufactured item at the time of purchase is called _____
- (vi) The tax charged on the owner of a land, house, flats or building is called a _____
- (vii) The tax charged on all taxable income is called _____
- (viii) If the annual value of a flat is Rs.6,00,000. Then the tax payable at a rate of 15% is _____
- (ix) The value added tax at the rate of 10% at the marked price of television of Rs.12000 is _____
- (x) The excise duty at rate of 150%, one has to pay against an amount of Rs.3,00,000 is _____

Ans:

(i) (tax)	(ii) (Direct tax)	(iii) (Indirect tax)
(iv) (Sales tax)	(v) (Excise duty)	(vi) (Property tax)
(vii) (Income tax)	(viii) (Rs.90,000)	(ix) Rs.(1200)
(x) Rs.(450,000)		

Q.3- The price of a tricycle is Rs.4000. If 16% sales tax is charged, then calculate the amount of sales tax on 30 such tricycles.

Solution:-

Price of one tricycle = Rs.4000

$$\begin{aligned} \text{Sales Tax on one tricycle} &= \frac{16}{100} \times 4000 \\ &= \text{Rs.640} \end{aligned}$$

$$\begin{aligned} \text{Sales Tax on 30 tricycles} &= \text{Rs}(640 \times 30) \\ &= \text{Rs.19200 Ans.} \end{aligned}$$

Q.4- If the total income of a person is Rs.7,00,000 with exempted amount of Rs.1,50,000. Find the tax chargeable @ 4.5%.

Solution:-

Total Income = Rs.7,00,000

Exempt amount = Rs.1,50,000

$$\begin{aligned} \text{Taxable income} &= \text{Rs}(7,00,000 - 1,50,000) \\ &= \text{Rs.5,50,000} \end{aligned}$$

$$\begin{aligned} \text{Tax chargeable @ 4.5\%} &= \frac{4.5}{100} \times 5,50,000 \\ &= \text{Rs.24750 Ans.} \end{aligned}$$

Q.5- The gas meter shows that 5.670 Hm^3 gas was used during a month period. Workout the payable amount inclusive GST @16%.

Solution:-

Meter reading = 5.670 Hm^3

We Know $1 \text{ Hm}^3 = 3.25 \text{ MMBTU}$ (nearly)

$$\begin{aligned} \text{So Meter reading} &= 5.670 \text{ Hm}^3 \\ &= 5.670 \times 3.25 \text{ MMBTU} \\ &= 18.4275 \text{ MMBTU} \end{aligned}$$

Now consider the table.

Hm ³	MMBTU	Rate Rupee/MMBTU	Price(Rs) MMBTU × Rate
First 0.5 Hm ³	0.5×3.25 $= 1.625$	Rs. 80.65	1.625×80.65 $= 131.06$
Next 0.5 Hm ³	1.625	Rs. 84.45	137.23
Next 1.0 Hm ³	3.25	Rs. 153.73	499.62
Next 1.0 Hm ³	3.25	Rs. 325.48	1057.81
Next 1.0 Hm ³	3.25	Rs. 423.42	1376.12
Next 1.0 Hm ³	3.25	Rs. 550.44	1788.93
Next 0.670 Hm ³	2.1775	Rs. 730.17	1589.95
Total $= 5.670 \text{ Hm}^3$			Total = 6580.72

Gas charges = Rs. 6580.75

Meter Rent = 20.00

Total = Rs. 6600.75

G.S. Tax @ 16% = $\frac{16}{100} \times 6600.75 = \text{Rs. } 1056.12$

Total amount of Bill = $(6600.75 + 1056.12)$
 $= \text{Rs. } 7656.87$ Ans.

Q.6- The number of units consumed while using electricity is as under.

- (i) 275 units (ii) 200 units
(iii) 340 units (iv) 285 units.

Complete the electricity bills, including the items as well as shown in the solved example of electricity bill.

Solution:-

(i) Units consumed = 275

Cost of first 100 Units @ Rs. 2.65 = 100×2.65
 $= \text{Rs. } 265.00$

$$\begin{aligned}\text{Cost of 175 Units} &= 175 \times 3.64 \\ &= \text{Rs.}637\end{aligned}$$

$$\begin{aligned}\text{Total Cost of 275 Units} &= \text{Rs.}(265 + 637) \\ &= \text{Rs.}902 \dots (i)\end{aligned}$$

$$\begin{aligned}\text{Excise duty @1.5\%} &= \frac{1.5}{100} \times 902 \\ &= \text{Rs.}13.530 \dots (ii)\end{aligned}$$

$$\text{Electricity duty} = \text{Rs.}19.04 \dots (iii)$$

$$\text{PTV fee} = \text{Rs.}25.00 \dots (iv)$$

$$\text{Income Tax} = \text{Rs.}27.50 \dots (v)$$

$$\text{Adding } i + ii + iii + iv + v$$

$$\begin{aligned}\text{Total Bill} &= \text{Rs.}(85.07 + 902) \\ &= \text{Rs.}987.07 \text{ Ans.}\end{aligned}$$

$$(ii) \quad \text{Number of Units} = 200$$

$$\begin{aligned}\text{Cost of first 100 Units @Rs.}2.65 &= 100 \times 2.65 \\ &= \text{Rs.}265.00\end{aligned}$$

$$\begin{aligned}\text{Cost of remaining 100 Units} &= 100 \times 3.64 \\ &= \text{Rs.}364\end{aligned}$$

$$\text{Total Cost of 200 Units} = \text{Rs.}(364 + 265) = \text{Rs.}629 \dots (i)$$

$$\begin{aligned}\text{Excise duty @1.5\%} &= \frac{1.5}{100} \times 629 \\ &= \text{Rs.}9.44 \dots (ii)\end{aligned}$$

$$\text{Electricity duty} = \text{Rs.}19.04 \dots (iii)$$

$$\text{PTV fee} = \text{Rs.}25.00 \dots (iv)$$

$$\text{Income Tax} = \text{Rs.}27.50 \dots (v)$$

$$\text{Adding } i + ii + iii + iv + v$$

$$\text{Total Bill} = \text{Rs.}710 \text{ Ans.}$$

$$(iii) \quad \text{Number of Units} = 340$$

$$\begin{aligned}\text{Cost of first 100 Units @Rs.}2.65 &= 100 \times 2.65 \\ &= \text{Rs.}265.00\end{aligned}$$

$$\begin{aligned}\text{Cost of 200 Units} &= 200 \times 3.64 \\ &= \text{Rs. } 728\end{aligned}$$

$$\begin{aligned}\text{Cost of 40 Units} &= 40 \times 6.15 \\ &= \text{Rs. } 246.00\end{aligned}$$

$$\begin{aligned}\text{Total Cost} &= \text{Rs. } (265 + 728 + 246) \\ &= \text{Rs. } 1239\end{aligned}$$

$$\begin{aligned}\text{Excise duty @ } 1.5\% &= \frac{1.5}{100} \times 1239 \\ &= \text{Rs. } 18.59\end{aligned}$$

$$\text{Electricity duty} = \text{Rs. } 19.04$$

$$\text{PTV fee} = \text{Rs. } 25.00$$

$$\text{Income Tax} = \text{Rs. } 27.50$$

$$\begin{aligned}\text{Total Bill} &= \text{Rs. } (1239 + 18.59 + 19.04 + 25.00 + 27.50) \\ &= \text{Rs. } 1329 \text{ Ans.}\end{aligned}$$

(iv) Number of Units = 285

$$\begin{aligned}\text{Cost of first 100 Units @ Rs. } 2.65 &= 100 \times 2.65 \\ &= \text{Rs. } 265.00\end{aligned}$$

$$\begin{aligned}\text{Cost of 185 Units} &= 185 \times 3.64 \\ &= \text{Rs. } 673.4\end{aligned}$$

$$\begin{aligned}\text{Cost of 285 Units} &= \text{Rs. } (265 + 673.4) \\ &= \text{Rs. } 938.4\end{aligned}$$

$$\begin{aligned}\text{Excise duty @ } 1.5\% &= \frac{1.5}{100} \times 938.4 \\ &= \text{Rs. } 14.08\end{aligned}$$

$$\text{Electricity duty} = \text{Rs. } 19.04$$

$$\text{PTV fee} = \text{Rs. } 25.00$$

$$\text{Income Tax} = \text{Rs. } 27.50$$

$$\begin{aligned}\text{Total Bill} &= \text{Rs. } (938.4 + 14.08 + 19.04 + 25.00 + 27.50) \\ &= \text{Rs. } 1024 \text{ Ans.}\end{aligned}$$

Q.7- The gross monthly pay of a person is Rs.75,000. If Rs.1500, Rs.1200 and Rs.1800 are deducted as income tax, benevolent fund and G.P fund respectively, and then calculate the net take home salary of the person.

Solution:-

Gross monthly pay = Rs.75000

Deductions = Rs.(1500 + 1200 + 1800)

= Rs.4500.

Take home salary = Rs.(75,000 - 4500)

= Rs.70500 Ans.

MULTIPLE CHOICE QUESTIONS

Tick the best choice.

- (i) In Pakistan rate of sales tax is
- (a) 15% (b) 16%
- (c) 17% (d) 18%
- (ii) The rate of excise duty is
- (a) 50% (b) 100%
- (c) Fixed every year
- (d) Different for different items.
- (iii) Excise duty on domestic electricity bill is
- (a) 1% (b) 1.50%
- (c) 2.00% (d) 2.50%
- (iv) The cost of telephone call depends upon
- (a) Length of call
- (b) Time of day and day of week
- (c) The distance between caller and that being called
- (d) All of these

- (v) The annual value of a flat is Rs. 1,60,000. The tax at a rate of 15% is
- (a) Rs. 8,000 (b) Rs. 16,000
 (c) Rs. 24,000 (d) Rs. 25,000
- (vi) 150% excise duty against the amount of 4,00,000 is
- (a) Rs. 4,00,000 (b) Rs. 5,00,000
 (c) Rs. 6,00,000 (d) Rs. 7,00,000
- (vii) 10% value added tax on the Price of Rs. 15,000 of an article is
- (a) Rs. 1400 (b) Rs. 1500
 (c) Rs. 1600 (d) Rs. 1700

MODEL CLASS TEST

Time : One Hour

Max Marks : 25

Note:- Attempt any four of the following question. (5 × 4)

- Q.1-** 750 Calls are made on a telephone. Complete telephone bill including the items.
- (a) Call rate Rs.5 per call, CED @15% and W.H Tax @4%.
- Q.2-** The Price of a bicycle is Rs.3500. If 16% sales tax is charged, then calculate the amount of sales tax on 50 bicycles.
- Q.3-** If annual income of a Person is Rs.6,25,000. Find the income tax @ 4.5% if Rs.1,50,000 is exempted.
- Q.4-** The Price of a Car is Rs.5,00,000, 150% excise duty has also been paid. How much had to be Paid to Purchase this car.
- Q.5-** Noman works 48 hours a week. The basic hourly rate is Rs.50 for 35 hours weekly. Overtime is paid at time and a half. How much does he earn in the week?