Q1. Ans.(E)
Explanation –
Let MP of article A = 100x Rs.
Selling price of article A
\[ = 100x \times \frac{(100-19)}{100} \]
\[ = 81x \text{ Rs.} \]
Selling price of article B = \[81x \times \frac{10}{9}\]
\[ = 90x \text{ Rs.} \]
Cost price of article B = \[\frac{90x}{120} \times 100 = 75x\]
Cost price of article A = \[\frac{81x}{125} \times 100 = 64.8x \text{ Rs.} \]
Given,
81x – 75x = 840
6x = 840
x = 140 Rs.
Cost price of article A = 64.8 \times 140 = 9072 \text{ Rs.} 

Q2. Ans.(A)
Explanation –
Let cost price of article is = 100
And profit = x
ATQ,
\[\frac{x}{100+(100+x)} = 16\frac{2}{3}\% \quad [100 + x \Rightarrow \text{S.P.}]\]
\[\frac{x}{200+x} = \frac{1}{6}\]
x = 40
profit percent = 40%
S.P. = 140

Mark price = \(\frac{\text{S.P.}}{1 + \text{profit percent}}\) = \(\frac{140}{1 + 0.40}\) = \(\frac{140}{1.40}\) = 100

Now
100 \rightarrow 1350

\(\frac{1400}{9} \times \frac{1350}{100} \times \frac{1400}{9} = 2100\)

Q3. Ans.(B)
Explanation –
CP (12 Oranges) = SP (9 Oranges)

\(P\% = \frac{\frac{3}{9} \times 100}{1} = \frac{100}{3} \%\)

Again, Given discount on 10 oranges = profit on 5 oranges
For profit on 3 oranges, \((12 + \frac{3}{2}) = 13.5\) oranges required for giving discount
Discount = 13.5 – 12 = 1.5
Discount = \(\frac{1.5}{13.5} \times 100 = \frac{100}{9} \%\)
Difference = \(\frac{100}{9} - \frac{100}{9} = 22.22\%\)

Q4. Ans.(B)
Explanation –
Let A’s CP of Pen = x
ATQ,
\((x + 60) = B’s\ cost\ price\)
B’s selling price = \((x + 60) \times \frac{150}{100} \times \frac{75}{100}\)
\[= 1.125x + 67.5\]
\[\text{ATQ,} \]
\[1.125x + 67.5 - x - 60 = 70\]
\[0.125x + 7.5 = 70\]
\[x = \frac{62.5}{0.125} \Rightarrow x = 500\]

A’s cost price = Rs 500

Q5. Ans.(B)

Explanation –
In vessel A
Nitrous oxide : Water = 7 : 2
In vessel B
Nitrous oxide : Water = 5 : 3

In 68 gm of mixture
Mixture taken from vessel A
= \[68 \times \frac{9}{17} = 36 \text{ gm}\]

Mixture taken from vessel B = \[68 \times \frac{8}{17} = 32 \text{ gm}\]

Total nitrous oxide in 68gm of mixture
= \[36 \times \frac{7}{9} + 32 \times \frac{5}{8}\]
= 28 + 20
= 48 gm

Total cost of 68 gm mixture = 68 \times 80
= 5440 Rs

Cost of nitrous oxide
= 48 \times 80
= 3840
Required profit = \frac{5440 - 3840}{3840} \times 100
= 41 \frac{2}{3}\% 

Q6. Ans.(D)
Explanation –
Let cost price of bike = 100x Rs.
So, Transportation cost = 25x Rs.
Total cost of bike = (100x + 25x) = 125x Rs.
Marked price of bike = (100x + 25x) \times \frac{120}{100} = 150x Rs.
Selling price of bike = 150x \times \frac{7}{6} = 131.25x Rs.
Profit = 131.25x – 125x = 6.25x Rs.
Total new cost price of bike = 100x + 25x \times \frac{120}{100} = 130x Rs.
New profit = 131.25x – 130x = 1.25x
Given,
6.25x – 1.25x = 2400
5x = 2400
x = 480 Rs.
Cost price of bike = 480 \times 125 = 60,000 Rs.

Q7. Ans.(D)
Explanation –
Let marked price of Jeans be Rs.9x and shirt be Rs.7x for man
CP of jeans for man = 9x \times \frac{8}{9} = 8x Rs.
CP of shirt for man = $7x \times \frac{6}{7} = 6x$ Rs.

Let total number of jeans purchased by man be $5y$ and shirt be $8y$

Total cost price for man

$$= 8x \times 5y + 6x \times 8y$$

$$= 88xy$$

SP of jeans on, which man sold

$$= 8x \times \frac{3}{2} \times \frac{3}{4} = 9x$$

SP of shirt on, which man sold

$$= 6x \times \frac{3}{2} \times \frac{8}{9} = 8x$$

Total S.P. on which man sold all items

$$= 9x \times 5y + 8x \times 8y$$

$$= 45xy + 64xy$$

$$= 109xy$$

Required\% = \frac{109xy - 88xy}{88xy} \times 100$

$$= 23\frac{19}{22}\%$$

Q8. Ans. (D)

Explanation –

ATQ

$$500 \left[ 1 + \frac{x}{100} \right] + 1500 \left[ 1 + \frac{2x}{100} \right] \left[ 1 - \frac{x}{100} \right] = 2000 \left[ 1 + \frac{x - 6}{100} \right]$$

$$500 + 5x + 1500 \left[ 1 + \frac{2x}{100} - \frac{x}{100} - \frac{2x^2}{100 \times 100} \right] = 2000 \left[ 1 + \frac{x - 6}{100} \right]$$

$$500 + 5x + 1500 + 15x - \frac{3x^2}{10} = 2000 + 20(x - 6)$$

$$2000 + 20x - \frac{3x^2}{10} = 2000 + 20x - 120$$
\[
\frac{3x^2}{10} = 120 \\
x^2 = 400 \\
\Rightarrow x = 20\%
\]

Q9. Ans(B)  
**Explanation** –  
Let original marked price be Rs 100x.  
Then, New marked price of article = Rs 160x.  
Selling price of article  
= \[160x \times \frac{7}{8} \times \frac{6}{7} \times \frac{4}{5}\] 
= 96x Rs.  
C.P. of article  
= \[96x \times \frac{5}{6}\] 
= 80x Rs.  
2\textsuperscript{nd} selling price  
= \[160x \times \frac{7}{8} \times \frac{4}{5}\] 
= 112x Rs.  
Given  
112x – 80x = 800  
32x = 800  
x = 25  
Cost price = 80 \times 25 = 2000 Rs.

Q10. Ans.(B)  
**Explanation** –  
Let cost price of each article = 100 x
Profit on 1st Article = 15x

Total profit = (100x + 100x) \times \frac{30}{100} = 60x

Profit on 2nd Article = 100x \times \frac{15}{100} + 1500

= 15x + 1500

Now

15x + 15x + 1500 = 60x

30x = 1500

x = 50

Cost price of Article = 5000

Q11. Ans. (B)

Explanation -

Let cost price of each candle = 100

Then cost price of each bulb = 200

Let ‘x’ is percentage of loss and profit

Now,

Profit on selling 10 candles = 10x \times \frac{100 \times x}{100} = 10x

Profit on selling 10 candles is equal to selling price of 3 bulbs

⇒ selling price of each bulb = \frac{10x}{3}

Now loss on selling 10 bulbs

10x \times \frac{200 \times x}{100} = 20x

Loss equal to the selling price of 4 candles

Selling price of each candle = 5x
Required Ratio = \( \frac{5x \times 3}{10x} = 3:2 \)

**Q12. Ans.(A)**
**Explanation** –
Let x kg is quantity of type 1 Rice
y kg is quantity of type 2 Rice
Let cost of type 2 Rice = 5a per kg
So cost of type 1 Rice = 6a per kg
Now cost price of mixture = 6ax + 5ay
Selling price of mixture = 5.5a per kg
\[ \text{Profit} = \frac{0.5ax-0.5ay}{5ay+6ax} \times 100 = \frac{100}{43} \]
\[ x : y = 3 : 5 \]

**Q13. Ans.(D)**
**Explanation** –
Let cost price of one Mi mobile be Rs. 100x and cost price of one Samsung mobile be Rs.120x
Marked price of Samsung mobile
\[ = 120x \times \frac{125}{100} = 150x \text{ Rs.} \]
Marked price of Mi mobile = \( 100x \times \frac{140}{100} = 140x \text{ Rs.} \)
Selling price of Samsung mobile = \( 150x \times \frac{75}{100} = 112.5x \text{ Rs.} \)
Selling price of Mi mobile = \( 140x \times \frac{80}{100} = 112x \text{ Rs.} \)
\[ \text{ATQ}– \]
\[ 112.5x - 112x = 160 \]
x = 320 Rs.
Marked price of one Samsung & one Mi mobile
= (150 × 320) + (140 × 320)
= 48000 + 44800
= 92800 Rs.

Q14. Ans.(D)
Explanation –
Let cost price of both article is 100x
Mark up price of article ‘A’ = 100x × \(\frac{150}{100}\) = 150x
Mark up price of article ‘B’ = 100x × \(\frac{170}{100}\) = 170x
Selling price of article ‘A’ = 150x × \(\frac{80}{100}\) = 120x
Selling price of article ‘B’ = 170x × \(\frac{80}{100}\) = 136x
Profit earned on article ‘A’ = 120x – 100x = 20x
Profit earned on article ‘B’ = 136x – 100x = 36x
Required % = \(\frac{36x-20x}{20x} \times 100\) = 80%

Q15. Ans.(D)
Explanation –
Cost price of one bat = \(\frac{140000}{700}\)
= 200 Rs.
If whole seller purchase all 700 bat in this got 100 free bats
and on every 59 bat got one free bat so total free bat out of 700
Selling price of one bat

\[ = 250 \times \frac{88}{100} \]

\[ = 220 \text{ Rs.} \]

Loss = \[ 140000 - (700 - 110) \times 220 \]

\[ = 140000 - 129800 \]

\[ = 10200 \text{ Rs.} \]

\[ \text{Loss\%} = \frac{10200}{140000} \times 100 \]

\[ = 7 \frac{2}{7} \% \]

Q16. Ans.(A)

Explanation –
Cost price of Honor 7 = 140x Rs.
Cost price of Redmi note 5 = 100x Rs.
Let number of Honor 7 shopkeeper purchased = 9y
and number of Redmi note 5 shopkeeper purchased = 7y
Total cost price = \[ 140x \times 9y + 100x \times 7y \]

\[ = 1260xy + 700xy \]

\[ = 1960xy \text{ Rs.} \]

M. P. of Honor 7 = \[ 1260xy \times \frac{8}{7} \]

\[ = 1440xy \text{ Rs.} \]

M. P. of Redmi note 5 = \[ 700xy \times \frac{6}{5} \]

\[ = 840 xy \text{ Rs.} \]

Total S. P. = \[ 1440xy \times \frac{3}{4} + 840xy \times \frac{4}{5} \]

\[ = 1080xy + 672xy \]
Q17. Ans.(D)
Explanation –
MP of shirt = 100x Rs
SP of shirt = 100 × \(\frac{76}{100}\) = 76x Rs
Cost price of jeans = 76x × \(\frac{5}{4}\)
= 95x Rs
Selling price of jeans = 95x × \(\frac{110}{100}\)
= 104.5x Rs
ATQ –
104.5x – 76x = 1140 Rs
28.5x = 1140 Rs.
X = 40 Rs.
Cost price of jeans = 95×40 = 3800 Rs.

Q18. Ans.(E)
Explanation –
Selling price of first article
= 19200 × \(\frac{88}{100}\)
= 16896 Rs.
Selling price of second article
Loss got by Akash
= 19200 – 18923.52
= 276.48 Rs.

Q19. Ans.(D)
Explanation –
Price of 12 shirts = 400 × 12 = Rs 4800
Price of 10 shirts = 400 × 10 = Rs 4000
Cash discount on 10 shirts = 10% of 4000 = Rs 400
∴ Total amount to be paid for 12 shirts
= 4000 – 400 = Rs 3600
Net discount availed
= \[ \frac{1200}{4800} \times 100\% = 25\% \]

Q20. Ans.(A)
Explanation –
Let’s selling price of first article = 7x Rs.
Marked price of second article = 8x Rs.
Cost price of first article = \[ 7x \times \frac{5}{4} = 8.75x \] Rs.
Selling price of second article
= \[ 8x \times \frac{4}{5} \]
= 6.4x Rs.
Cost price of second article
= 6.4x × \frac{4}{5}
= 5.12x Rs.
Total cost price of both article = (8.75x + 5.12x) Rs.
= 13.87x Rs.
Total selling price of both article = (7x + 6.4x) = 13.4x Rs.
ATQ—
13.87x – 13.4x = 282
x = \frac{282}{0.47}
x = 600
Total selling price of both article = 13.4 \times 600 = 8040 Rs.

Q21. Ans. (B)
Explanation —
Let selling price of Article A, B and C be 3y, 4y and 5y respectively
And, profit percentage on these article
4x, 12x and 5x respectively
ATQ
\frac{3y}{4y} = \frac{100+4x}{100+12x}
36x – 16x = 400 – 300
x = 5
So, profit percentage of on article A, B and C is 20%, 60%,
25% respectively
5y = 120 + 120 \times \frac{1}{4}
5y = 150
4 = 30 Rs.
Selling price of Article A = 90 Rs.
Selling price of Article B = 120 Rs.

Overall profit
\[ = \frac{90}{6} \times 1 + \frac{120}{8} \times 3 + \frac{150}{5} \times 1 \]
\[ = 15 + 45 + 30 \]
\[ = 90 \text{ Rs.} \]

Q22. Ans.(B)

Explanation –
Let C.P. of LED = 100x Rs.
M.P of LED = 160x Rs.

First discount = \(160x \times \frac{1}{6}\)
\[ = 20x \text{ Rs.} \]

Second and third discount
\[(160x - 20x) \times \frac{(100-d)}{100} \times \frac{(100-25)}{100} = 84x\]
\[140x \times \frac{100-d}{100} \times \frac{3}{4} = 84x\]
\[21 (100 - d) = 84 \times 20\]
\[21d = 2100 - 1680\]
\[d = \frac{420}{21}\]
\[d = 20\% \]

Q(23-24) :

Explanation –
Lets cost price of A, B and C type of mobile be Rs. 5x, Rs. 7x and Rs. 9x respectively
M.P. of type A mobile = \(5x \times \frac{130}{100} = Rs. 6.5x\)
M.P. of type B mobile = \(7x \times \frac{140}{100} = Rs. 9.8x\)
M.P. of type C mobile = \(9x \times \frac{110}{100} = Rs. 11.7x\)
S.P. of type A mobile = \(6.5x \times \left(1 + \frac{200}{13}\right) \times \frac{1}{100} = 6.5x \times \frac{11}{13} = Rs. 5.5x\)
S.P. of type B mobile = \(11.7x \times \left(1 + \frac{150}{7}\right) \times \frac{1}{100} = Rs. 7.7x\)
S.P. of type C mobile = \(11.7 \times \frac{8}{9} = Rs. 10.4x\)

Q23. Ans.(D)
Explanation –
Total cost price of Fourteen type A mobile = \(14 \times 5x = Rs. 70x\)
Total selling price of fourteen type A mobile = \(14 \times 5.5x = 77x\)
Given total profit = Rs. 17500
\(7x = 17500\)
\(x = Rs. 2500\)
Total profit made by store owner on type B and type C mobile = \((7.7 \times 20 - 7 \times 20) \times 2500 + (10.4 \times 15 - 9 \times 15) \times 2500\)
= \(14 \times 2500 + 21 \times 2500\)
= \(35000 + 52500 = Rs. 87500\)

Q24. Ans.(C)
Explanation –
In the transaction —
Given,
In 48 type A mobile, 12 mobile are free.
In 36 type B mobile, 6 mobile are free.
In 39 type C mobile, 9 mobile are free.
Total profit of store owner on selling of 48 type A mobile = 48 \times 5x - 36 \times 6.5x = 240x - 234x = 6x
Total loss of store owner on selling of 36 type mobile = 36 \times 7x - 30 \times 9.8x = 252x - 294x = 42x
Total loss of store owner on selling of 39 type C mobile = 9x \times 39 - 11.7x \times 30 = 351x - 351x = 0
Total loss of store owner in this transaction = 42x - 6x = 36x
Total cost price = 48 \times 5x + 36 \times 7x + 39 \times 9x = 240x + 252x + 351x = 843x
Required% = \frac{36x}{843x} \times 100 = 4.28% 

Q25. Ans.(E)
Explanation – 
Let shopkeeper mixed 2x kg type A and 3x kg type B potato
Total cost price of mixture = 2x \times 12 + 3x \times 8 = 48x Rs.
Total selling price of mixture = (12 \times 5x) \times \frac{5}{6} = 50x Rs.
Total profit = 50x - 48x = 2x Rs.
Profit\% = \frac{2x}{48x} \times 100
Q26. Ans.(b)
Explanation –
Let the MP of a chair and a table be Rs.5x and Rs.8x respectively.
And, the number of chairs and tables bought be 6y and 5y respectively.
CP of a chair for Abhishek = (100 – 20)% of 5x = Rs.4x
CP of a table for Abhishek = (100 – 25)% of 8x = Rs.6x
Total CP for Abhishek = 4x × 6y + 6x × 5y = 24xy + 30xy = 54xy
SP of a chair for Abhishek = (100 – 25)% of (100 + 50)% of 4x = 4.5x
SP of a table for Abhishek = (100 – 20)% of (100 + 50)% of 6x = 7.2x
Number of chairs sold in bunch of four by Abhishek = \( \frac{2}{3} \)rd of 6y = 4y
So, number of table sold for free by Abhishek = \( \frac{1}{4} \)th of 4y = y
Total SP for Abhishek = 4.5x × 6y + 7.2x × (5y – y) = 27xy + 28.8xy = 55.8xy
Profit % = \( \frac{55.8xy - 54xy}{54xy} \times 100 = \frac{1.8xy}{54xy} \times 100 = 3 \frac{1}{3} \% \)

Q27. Ans.(c)
Explanation –
According to the question,
MP of a table = 300 + MP of a chair
\[
\Rightarrow 8x = 300 + 5x \\
\Rightarrow x = 100 \\
\text{Total CP for Abhishek} = 108000 \\
\Rightarrow 54xy = 108000 \\
\Rightarrow 54 \times 100 \times y = 108000 \\
\Rightarrow y = 20 \\
\text{Number of chairs purchased by Abhishek} = 6y = 120
\]

Q28. Ans. (b) 
Explanation –
Original company price = \(1660 \times \frac{100}{83} = 2000\) Rs.
SP of garments, which Sameer fixed = \(2000 \times \frac{107}{100} = 2140\) Rs.

Q29. Ans. (c) 
Explanation –
Ratio of profits = Ratio of (amount \times time)
Let, initial amounts of Raju, Rancho & Farhan be 5x, 7x and 9x respectively
\[
\begin{align*}
5x \times 3 + 5x \times 3 & : 7x \times 3 + \frac{7x}{2} \times 6 + 7x \times 3 : 9x \times 3 + 27x \times 6 + \frac{27x}{9} \times 3 \\
& = 10 : 21 : 66 \\
& \left( \frac{21 - 10}{97} \right) \times 11737 = 11 \times 121 = 1331\text{ Rs}
\end{align*}
\]

Q30. Ans. (e) 
Explanation –
Ratio of their amounts at the end of 1\text{st} year
= 5 : 7 : 3
Profit Share of Rancho = \( \frac{7}{15} \times 22500 = 7 \times 1500 = Rs \ 10500 \)

Q31. Ans.(a)
Explanation –
Ramu’s discount:
8% on 8000 = 640
5% on 12000 = 600
3% on 16000 = 480
Total = 1720 on 36000
Final S.P. on Ramu sold shashi= 34280
Shyamu’s Discount:
7% on 12000 = 840
6% on 8000 = 480
5% on 16000 = 800
Total = 2120 on 36000
Final SP on Shyamu sold to Rajesh= 33880
C.P. for both of them = \( 36000 \times \frac{100}{125} = 28800 \)
Ramu has greater Profit
Profit\% for Ramu = \( \frac{(34280-28800)}{28800} \times 100 = 19\% \) (approx.)

Q32. Ans.(a)
Explanation –
Ramu’s Discount:
8% on 8000 = 640
4% on 12000 = 480
1% on 16000 = 160
Total = 1280 on 36000
Final SP for him = 36000 – 1280 = 34720
Profit = 34720 – 28800 = 5920

Q33. Ans.(a)
Explanation –
Given that Kailash car’s average (in term of litres per kilometer is 20% higher the Shyam is car)
Let Kailash car takes x litres of petrol per kilometer then,
Shyam car will take $\frac{5}{6}x$ litres of diesel per kilometer
Also,
Cost price / litre of petrol = cost price / litre of diesel + 60% of cost price/litre of petrol.
\[
\frac{\text{cost price}}{\text{L of petrol}} = \frac{5}{2}
\]
Required ratio = $\frac{\text{cost/kilometre kailash car}}{\text{cost/kilometer of shyam's car}}$
\[
= \frac{5}{\frac{5}{6}x \times 2} = 3 : 1
\]

Q34. Ans.(e)
Explanation –
Shyam’s car gives 20 km/litre means, it takes 0.05 litres of diesel per kilometer
\[
\frac{5}{6}x \rightarrow 0.05
\]
\[x \rightarrow 0.06 \text{ (litre/km for kailash car)} \]
cost price per litre of diesel = 12.5 Rs/L
so, cost per litre of petrol = \( \frac{12.5 \times 5}{2} \)
= 31.25 Rs/L
Required difference = \( 0.06 \times 31.25 - 0.05 \times 12.5 \)
= 1.25

Q35. Ans.(c)
Explanation –
Let Satish, Veer, Arun and Yogesh buy ‘w’, ‘x’, ‘y’ and ‘z’ bicycle respectively.
According to direction given
\( w + x = y \) ...(i)
\( x + y = z \) ...(ii)
\( y = 20 \) ...(iii)
\( z - w = 24 \) ...(iv)
By solve (i), (ii), (iii) and (iv)
We get
\( w = 8, x = 12, y = 20, z = 32 \)
Let Satish, Veer, Arun and Yogesh get ‘a%’, ‘b%’, ‘c%’ and ‘d%’ discount by wholeseller on MP.
According to direction given,
\( b + c = a + d \) ...(i)
\( c = a + b \) ...(ii)
\( d = a + c \) ...(iii)
\( d - b = 10\% \) ...(iv)
By solving (i), (ii), (iii) and (iv)
We get
\( a = 5\%, \ b = 10\%, \ c = 15\%, \ d = 20\% \)
Let marked price of each bicycle = 100x
Satish buy 1 bicycle at = 95x
Arun buy 1 bicycle at = 85x
Profit earn by Satish = 800x – 8 \times 95x
= 800x – 760x
= 40x
Profit earn by Arun = 800x – 8 \times 85x
= 800x – 680x
= 120x

\[ \text{Desired} \% = \frac{120x - 40x}{40x} \times 100 = \frac{80x}{40x} \times 100 = 200\% \]

Q36. Ans.(e)
Explanation –
Total bicycle Yogesh bought = 32
Let M.P. = 100x
C.P. of 32 bicycle = 32 \times 80x = 2560x
S.P. of 8 bicycle at 10\% discount = 8 \times 90x = 720x
S.P. of 18 bicycle at 30\% discount = 18 \times 70x = 1260x
S.P. of 6 bicycle on M.P. = 6 \times 100x = 600x
Total S.P. = 720x + 1260x + 600x = 2580x
Profit = 2580x – 2560x = 20x
100x = 20,000
x = 200
Total profit = 20 × 200 = 4000

Q37. Ans.(b)
Explanation –
Let the marked price of a chair be = Rs 50
And the marked price of a table be = Rs 70
Also, no. of chairs bought be = 9x
And no. of tables bought be = 8x
C.P. of chair for Raghav = $\frac{4}{5} \times 50 = 40$
C.P. of table for Raghav = $\frac{3}{4} \times 70 = 52.5$
Total C.P. for Raghav = 9x × 40 + 8x × 52.5 = 780x
Total S.P. for Raghav = 7x × 40 × 1.5 × 0.75 + 8x × 52.5 × 1.5 × 0.8
= 315x + 504x
= 819x
Profit % = $\frac{819 - 780}{780} \times 100 = \frac{39}{780} \times 100 = 5%$

Q38. Ans.(a)
Explanation –
C.P. for Raghav = 90 × 40 + 80 × 52.5 = 3600 + 4200 = 7800
Required average price = $\frac{7800}{170} = Rs 45.88$

Q39. Ans.(e)
Explanation –
Let cost of pure rice per kg is 10 Rs.
So cost of impure rice per kg is 4 Rs.
Total cost for the shopkeeper
Q40. Ans. (d)
Explanation –
Let 15 pens and 15 pencils are sold and cost of 1 pen is 10 Rs.
So, Cost of 3 pen is 30 Rs. which is equal to cost of 5 pencils.
Total cost price of 15 pens and 15 pencils
= 15 × 10 + 6 × 15
= 150 + 90
= 240 Rs.
Total selling price of 15 pens and 15 pencils
= 150 × \frac{6}{5} + 90 × \frac{4}{3}
= 180 + 120
= 300
Overall percentage profit = \frac{300 - 240}{240} × 100 = \frac{60}{240} × 100 \Rightarrow 25%
Total cost price of 100 article = \( \frac{660 \times 100}{120} \)
= 550

Manufacturing cost of per article = \( \frac{550}{100} \) = 5.50 Rs

Q42. Ans.(a)
Explanation –
C. P. of car = \( \frac{90}{100} \times 4,50,000 \) = Rs. 4,05,000
C. P. of scooter = \( \frac{1}{10} \times 4,05,000 \) = Rs. 40,500
M. P. of scooter = Rs. 50,625
C.P. of car and scooter = 4,05,000 + 40,500
= 4,45,500
S. P of car and scooter = \( \frac{130}{100} \times 4,45,500 \) = Rs. 5,79,150
S. P of car = 5,79,150 – \( \frac{110}{100} \times 40,500 \)
= 5,79,150 – 44,550
= 5,34,600
Required Ratio = \( \frac{50,625}{5,34,600} \) = \( \frac{25}{264} \)

Q43. Ans.(a)
Explanation –
Table : Chair = \frac{1}{2} : \frac{1}{3} = 3 : 2

Let table = 3x
Chair = 2x

ATQ-
\[3x \times \frac{25}{2} \times \frac{1}{100} - 2x \times \frac{25}{3} \times \frac{1}{100} = 25\]
\[\frac{5x}{24} = 25\]
\[x = 120\]

\[\therefore \text{Table} = 360 \text{ Rs.}\]
\[\text{Chair} = 240 \text{ Rs.}\]

Q44. Ans.(c)
Explanation –

Let dealer cost for 100. kg
Shopkeeper buys goods worth : \[1.2 \times 100 = 120 \text{ kg}\]
shopkeeper sells to customer goods worth= \[100 \times \frac{80}{100} = 80 \text{ kg}\]
profit= \[120-80=40 \text{ kg}\]
Required %= \[40 \times \frac{100}{80}\]
\[\therefore \text{Profit %} = 50\%\]
Q45. Ans.(b)
Explanation –
CP of 150 calculators = 150 × 250 = Rs. 37500
Total CP = 37500 + 2500 = Rs. 40000
MP of 150 calculators = 150 × 320 = Rs. 48000.
SP after discount = 48000 × \(\frac{95}{100}\) = Rs. 45600.
∴ Percentage profit = \(\frac{45600 - 40000}{40000}\) × 100 = 14%

Q46. Ans.(b)
Explanation –
Let cost price = 100
Then mark price = 100 × \(\frac{3}{2}\) = 150
Let discount percent and profit percent = x
ATQ,
\[\frac{100(100+x)}{100} = \frac{150(100-x)}{100}\]
x = 20%

Q47. Ans.(b)
Explanation –
Let the correct weight be 1 kg and C.P. be Rs 1/g
Quantity purchased by the shopkeeper = 1250 g
Quantity sold by the shopkeeper = 750 g
We have
S.P. of 750 g = C.P. of 1250 g
⇒ S.P. of 750 g = Rs 1000
⇒ C.P. of 750 g = \( \frac{1000 \times 750}{1250} = 600 \) Rs
Therefore, profit by selling 750 g of item = 1000 - 600 = Rs 400
Profit percentage = \( \frac{400}{600} \times 100 \)
= 66.67%

Q48. Ans.(c)
Explanation –
Let the cost price be Rs. 100
Then marked price will be Rs. 150
He gives 10% discount, so
Selling price = 150 × \( \frac{90}{100} \) = Rs. 135
As he cheats and gives 20% less in weight,
Cost price becomes = 100 × \( \frac{80}{100} \) = Rs. 80
\[ \therefore \text{Profit percentage} = \frac{135 - 80}{80} \times 100 \approx 68\% \]

Q49. Ans.(c)
Explanation –
Let, total expenditure on an item be Rs. 100
Then S.P. of item = 125
New expenditure on raw materials = 1.15 × 40 = 46
New expenditure on labour = 1.2 × 20 = 24
New expenditure on miscellaneous = 1.5 × 20 = 30
Profit percentage = \( \frac{125 - 120}{120} \times 100 \)
= 4 \( \frac{1}{6} \)%
Q50. Ans.(c)
Explanation –
To get a profit of $\frac{13}{11}$% at a selling price of Rs. 125, the C.P. of an item must be equal to $125 \times \frac{100}{1250} = 110$

We need to reduce C.P. (or expenditure) by 10, and this 10 has to be reduced from expenditure on raw materials.

Required % = $\frac{10}{110} \times 100 = 21\frac{7}{23}$% 

51. B
Explanation:
30% of x = 35% of y ; x + y = 572
x/y = 7/6
Difference = Rs.44

52. A
Explanation:
Profit= 10%
10% of CP = Rs. 100
CP = Rs. 1000
Now, Loss% = 10%
Loss = Rs. 100
Required % = $\frac{100}{100} \times 100 = 100$

53. D
Explanation:
CP of 1st bangle set = x
CP of 2nd bangle set = 600-x
SP of 1st bangle set = 4x/5
SP of 2nd bangle set = (600-X)5/4
Profit = SP-CP
96 = 4x/5 + (600-X)5/4 - 600
X = 120

Shortcut:
-20.................25
..........16.............
9.................36
1 : 4
5 = 600
1 = 120

54. C
Explanation:
Marked price = (120/100)*CP
cash sales = 45 and credit sales = 15
(120/100)*cp*90/100*45 + (120/100)*cp*95/100*15 - 60*cp = 11400
Cp = 2000

55. B
Explanation:
Let initial income = 100 so his saving is rupees = 20.
Now his income is 116 and he save = 116*25/100 = 29
So \% increase in saving = \(\frac{9}{20} \times 100 = 45\%\)

56. B

**Explanation:**

Cp:mp = 3x:5x = 300:500

Profit = 2x

P:d = 5:3

\[
\frac{5x \times 300}{100} + \frac{3x \times 500}{100} = 100
\]

30x = 100

\(x = \frac{100}{30} = 3.33\%\Rightarrow 5x = 16.65\%\)

57. A

**Explanation** – Let's marked price of note book for both shop = 100x Rs.

Selling price of note book on shop P

\[
100x \times \frac{(100 - 25)}{100} = 75x \text{ Rs.}
\]

Given,

\[
75x = 375
\]

x = 5

marked price of note book = 500 Rs.

ATQ—

Selling price of note book on shop Q=

Marked price of note book

\[
x \times \frac{100 - d}{100} \times \frac{100 - 8}{100} = \text{selling price of note book on shop P} + 39
\]

\[
500 \times \frac{(100 - d)}{100} \times \frac{(100 - 8)}{100} = (375 + 39)
\]

5d = 500 - 450
d = \frac{50}{5}
\implies d = 10

58. A

**Explanation** – Let's production cost of 100 kg of wheat = 100x Rs.

Packaging cost of 100 kg of wheat = 15x Rs.
actual cost price of 100 kg of wheat = 100x + 15x = 115x Rs.

New production cost of 100 kg of wheat = 100x \times \frac{90}{100} = 90x Rs.

New Packaging cost of 100 kg of wheat = 15x \times \frac{140}{100} = 21x Rs.

New actual cost price of 100 kg wheat = 90x + 21x = 111x

Required percentage = \frac{115x - 111x}{115x} \times 100
\implies = 3.48%

59. B

**Explanation**:
Total CP of Rice = 30 \times 40 = 1200
40% of Total Quantity = 40% of 30 = 12
SP = 12 \times 50 = 600
SP = 1200 \times \frac{125}{100} = 1500
SP of Remaining Quantity = 1500 - 600 = 900
Remaining Quantity = 18kg
Rice per Kg = 900/18 = Rs. 50
60. C
Explanation:
S.P of Smart Phone = Rs.15000
Discount = 10%
New SP = 15000 – 1500 = Rs. 13500
Profit = 8%
CP = 13500 * 100/108 = 12500
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