

MBA PIONEER 2024

QUANTITATIVE APTITUDE

DPP: 10

Mixtures and Allegations - 1

Q1 Raju stole milk from a jar containing 30% milk. He replaced the stolen milk with milk containing 20% milk. Jar now contained 29% milk. Find the percentage of jar stolen by him?

- (A) 10% (B) 12%
 (C) 14% (D) 15%

Q2 Raman buys milk at Rs. 70/liter and mixes it with water. Later he sells the mixture at the same rate. Doing this he gains 10%. What is the quantity of water mixed by him per liter of milk?

- (A) 0.5 liter (B) 0.25 liter
 (C) 0.1 liter (D) 0.01 liter

Q3 Mixture of worth Rs. 44/liter is formed after mixing two types of milk, one costing Rs. 40/liter and other costing Rs. 50/liter. Find the proportion in which they have been mixed.

- (A) 1: 3 (B) 3: 5
 (C) 3: 4 (D) 3: 2

Q4 In the Patna Zoo there are tigers and ducks. If we count the heads it is 72 in number and if legs are counted it is 168 in number. Find the number of tigers in the zoo.

- (A) 10 (B) 12
 (C) 18 (D) Can't be determined

Q5 Find the capacity of the vessel, if 10 litres of the mixture from the vessel consisting of chemical A

and B in the ratio of 2: 7 is removed and replaced with chemical A thereby changing the ratio of A and B to 4: 11?

- (A) 190 (B) 175
 (C) 185 (D) 165

Q6 The ratio of water and milk in the container is 5: 4. When 20 litres of the mixture is taken out and replaced by milk, the ratio becomes 4 : 5. Find the volume of the container.

- (A) 80 (B) 100
 (C) 120 (D) 150

Q7 A mixture of water and milk contains 60% milk. In 60 litres of such mixture, how many litres of water is required to be added to increase the percentage of water to 50%

- (A) 15 (B) 12
 (C) 20 (D) 18

Q8 600 grams mixture contains sand and cement in the ratio of 3: 7, respectively. If 20 grams of sand and 80 grams of cement are added to the mixture, then calculate the ratio of cement to sand in the resultant mixture.

- (A) 4: 1 (B) 5: 2
 (C) 3: 4 (D) 5: 6

Q9 A mixture of milk and water is sold for Rs. 27.50 per litre making a profit of 25 %. If the cost of pure milk is Rs. 24 per litre, find the ratio of water and milk in the mixture, assuming water is free of cost.



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(A) 11:1
(C) 2:10

(B) 5:2
(D) 1:11

Q10 Water and milk is added in an empty container in the ratio of 2:15, respectively. If 14 more litres of water is added in the container, then the ratio of water to milk becomes 1:4, respectively. Find the amount of water added initially.

- (A) 16 litres
- (B) 12 litres
- (C) 18 litres
- (D) 20 litres

Q11 Mixture A contains lemon juice and water mixture in the ratio 4 : 7 and mixture B of equal quantity contains sprite and water mixture in the ratio 5 : 11. 25% of mixture A and 50% of mixture B are mixed to form a new mixture. Find the ratio of juice, water and sprite respectively.

- (A) 16 : 63 : 121
- (B) 32 : 114 : 117
- (C) 32 : 177 : 55
- (D) 21 : 152 : 97

Q12 760ml of mixture 'A' contains milk and water in the ratio of 12 : 7, respectively, while 500ml of mixture 'B' contains milk and water in the ratio of 13 : 12, respectively. If 60% of mixture 'A' is mixed with 40% of mixture 'B' in a jar, then find the ratio of milk to water in the jar.

- (A) 49 : 33
- (B) 29 : 13
- (C) 39 : 23
- (D) 59 : 23

Q13 250 litres of mixture contains 60% of milk and rest water. If milk and water are added in the mixture in the ratio of 1 : 2, respectively then ratio of milk and water in the final mixture becomes 9 : 8, respectively. Find the quantity of milk which is added in the mixture.

- (A) 15 litres
- (B) 30 litres
- (C) 35 litres
- (D) 60 litres

Q14 A grocer has two varieties of wheat, wheat A and wheat B costing Rs. 5 per kg and Rs. 6 per kg respectively. He sells the total mixture of wheat A and wheat B having 1050 kg of wheat A for Rs. 12600 with a profit margin of 20%. How much quantity of wheat B is present in the mixture sold?

- (A) 725 kg
- (B) 800 kg
- (C) 700 kg
- (D) 875 kg

Q15 480 litres of mixture of milk and water containing 75% milk. What minimum quantity of water should be added to the mixture such that the percentage of water in the final mixture is in the range of 40 – 50% ?

- (A) 80 litres
- (B) 120 litres
- (C) 160 litres
- (D) 200 litres

Q16 There are two alloys. Alloy P is made up of 50% gold, 20% silver and 30% bronze while Alloy Q contains only gold and silver. An alloy is formed by mixing these two alloys, in the resulting alloy concentration of gold is 50%, silver is 40% and bronze is 10%. Then what is the concentration of gold and silver in alloy Q?

- (A) 60% and 40%
- (B) 40% and 60%
- (C) 55% and 45%
- (D) None of these

Q17 Jar 'A' and 'B' contains mixture of salt and water such that quantity of salt in jars 'A' and 'B' is



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40% and 66%, respectively. Some of the mixture is taken out from both jars and poured into an empty container. If the container now contains 260 litres of mixture such that ratio of quantity of salt and water in it is 13 : 12, respectively, then how much mixture was withdrawn from jar 'A'?

- (A) 140 litres (B) 160 litres
 (C) 100 litres (D) 120 litres

Q18 A 324 litre mixture of milk, water and honey contains water and honey in the ratio 3 : 5, respectively and the quantity of milk in the mixture is 60 litres more than that of water. If 54 litres of the mixture is replaced with 12 litres of milk and 18 litres of water, then water would form how much percentage of the resultant mixture?

- (A) 24%
 (B) 20%
 (C) 26%
 (D) 32%

Q19 A packet of mother diary milk was found to be adulterated. It contains milk and water in ratio 7 : 5. If we take out 9 litres of the mixture from the packet to mix the remaining mixture with 9 litres of water then the ratio becomes 7 : 9. Calculate how many litres of milk was in the packet initially?

- (A) 14 litres
 (B) 15 litres
 (C) 18 litres
 (D) 21 litres

Q20 Two jars 'A' and 'B' having equal capacities are completely filled with the solution containing ethanol as one component. Jar 'A' contains 12% ethanol while jar 'B' contains 47% ethanol. Some of the solution from the jar 'A' is

withdrawn and replaced with same quantity of solution from jar 'B'. If jar 'A' now contains 26% ethanol, then how much percent solution is left in jar 'B' now?

- (A) 60%
 (B) 50%
 (C) 40%
 (D) 80%

Q21 A man mixes two kinds of pulses and mixes them in a certain ratio. He buys the first kind of pulses at Rs. 22 per kg and second one at Rs. 16 per kg. How much quantity of the first kind should be mixed with 25 kg of the second kind so that he can gain a profit of 20% if he is selling the mixture at Rs. 24 per kg ?

- (A) 45 kg
 (B) 50 kg
 (C) 55 kg
 (D) 60 kg

Q22 There are three bottles having capacities in the ratio 1 : 2 : 3 containing Appy Fizz and Water. Bottle 1 contains Appy Fizz and Water in the ratio of 2 : 3, Bottle 2 contains Appy Fizz and Water in the ratio of 4 : 7 and bottle 3 contains Appy Fizz and Water in the ratio of 1 : 2. What will be the ratio of Water and Appy Fizz when the contents of all the three bottles are mixed together?

- (A) $\frac{39}{71}$
 (B) $\frac{34}{71}$
 (C) $\frac{39}{110}$
 (D) $\frac{71}{39}$

Q23 $(x + 32)$ litres of a mixture (milk + water) contains 84 litres milk such that if $(x - 64)$ litres of the mixture is replaced with 4 litres of milk, then quantity of milk would be 60% of the resultant mixture. Find the value of ' x '.



- (A) 124 (B) 110
 (C) 112 (D) 118

Q24 In a mixture of ' x ' litres, the quantity of milk is 20% more than the quantity of water. In another mixture of 180 litres, the quantity of water is 50% more than the quantity of milk. After mixing both the mixture, the ratio of the milk to water becomes 10 : 11, find the value of x .

- (A) 198 litres
 (B) 192 litres
 (C) 200 litres
 (D) 208 litres

Q25 A 100 litres solution of chemical A and B containing $x\%$ of chemical A is mixed with another 100 litres solution of chemical A and B (70% content chemical A) to get the resultant mixture such that chemical A and B is in the ratio 2 : 1. Find the approximate value of x .

- (A) 65 (B) 63
 (C) 61.7 (D) 60

Q26 There are two mixtures 'A' and 'B' of quantity 660 litres and 840 litres respectively. Each of them contains acetone and water only. The ratio of acetone in mixture 'A' to that in mixture 'B' is 4 : 5. The quantity of water in mixture 'A' is 120 litres less than that in 'B'. The quantity of water in mixture 'B' is how much percent more/less than that of the acetone in it.
 (A) 60%
 (B) 80%
 (C) 45%
 (D) 50%

Q27 A $(x + 18)$ litre mixture of only milk and water contains 24 litres more water than milk. If $(x - 87)$ litres of the mixture was replaced with 3 litres of water, then the quantity of water

would become 40% more than that of milk. Find the value of ' x '.

- (A) 140 (B) 210
 (C) 150 (D) 180

Q28 750ml of mixture contains milk and water in the ratio of 8 : 7 respectively. If 40% of the mixture is taken out, and x ml of milk and $(x - 75)$ ml of water is added into the remaining mixture such that the ratio of milk to water in the resultant mixture becomes 11 : 8. Find the value of ' x '.

- (A) 175 (B) 145
 (C) 125 (D) 165

Q29 There are two types of container A and B and the quantity of mixture in container B is double of the quantity of mixture in container A. The ratio of the milk to water in container A and B is 5 : 3 and 3 : 2 respectively. If 40% mixture of container A is mixed with the 50% mixture of the container B, then find the ratio of milk to water in the resultant mixture.

- (A) 5 : 7
 (B) 17 : 11
 (C) 9 : 10
 (D) 7 : 11

Q30 Adarsh has 240 liters of acetone and 150 litres of water in two separate containers. He took out 75% of acetone and 40% water and mixed them in a tank which contains mixture of acetone and water in the ratio 3 : 2, respectively such that the ratio of acetone to water in the resultant mixture becomes 12 : 5. Find the total quantity of acetone in the resultant mixture.

- (A) 190 litres
 (B) 200 litres
 (C) 240 litres
 (D) 250 litres



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Answer Key

Q1 (A)
Q2 (C)
Q3 (D)
Q4 (B)
Q5 (B)
Q6 (B)
Q7 (B)
Q8 (B)
Q9 (D)
Q10 (A)
Q11 (C)
Q12 (A)
Q13 (B)
Q14 (D)
Q15 (B)

Q16 (D)
Q17 (A)
Q18 (C)
Q19 (D)
Q20 (A)
Q21 (B)
Q22 (D)
Q23 (C)
Q24 (A)
Q25 (B)
Q26 (B)
Q27 (C)
Q28 (B)
Q29 (B)
Q30 (C)



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Hints & Solutions

Q1 Text Solution:

Let Raju stole x litre of mixture from 100 liter of mixture.

So, Milk remaining in mixture

$$\begin{aligned} &= [30 - (30\% \text{ of } x)]L \\ &= 30 - \frac{3x}{10} \end{aligned}$$

Again addition of milk = 20% of x

$$= \frac{x}{5}$$

So, $30 - \frac{3x}{10} + \frac{x}{5} = 29\% \text{ of } 100$

$$\begin{aligned} \Rightarrow 30 - \frac{x}{10} &= \left(\frac{29}{100} \times 100 \right) \\ \Rightarrow 1 &= \frac{x}{10} \\ \Rightarrow x &= 10 \end{aligned}$$

Required percentage = $\left(\frac{10}{100} \times 100 \right) \% = 10\%$

Q2 Text Solution:

Let Raman bought 10 liter of milk at Rs. 70/liter.

Suppose he mixed x liter of water in it.

Now, actual quantity in liter of mixture
 $= (10 + x)$

So, selling price at same rate = $70(10 + x)$

Now, according to the question.

$$\frac{700 + 70x - 700}{700} \times 100 = 10$$

or $70x = 70$

or $x = 1$

So, per liter water mixed

$$= \frac{1}{10}$$

= 0.1 liter

Ans. (c)

Q3 Text Solution:

Let x liter of type A milk and y liter of type B milk is mixed.

Now, according to the question.

$$\begin{aligned} \frac{40 \times x + 50 \times y}{x + y} &= 44 \\ \Rightarrow 40x + 50y &= 44x + 44y \\ \Rightarrow 4x &= 6y \\ \Rightarrow \frac{x}{y} &= \frac{3}{2} \end{aligned}$$

So they were mixed in 3 : 2

Ans. (d)

Q4 Text Solution:

Let the number of tigers and ducks are x and y respectively.

Now, $x + y = 72$

and $4x + 2y = 168$

Solving eq. (i) and (ii) we get

$$\begin{aligned} 2x &= 168 - 144 \\ x &= \frac{24}{2} = 12 \end{aligned}$$

Hence number of tigers = 12

Ans. (b)

Q5 Text Solution:

Let the capacity of the vessel be V .

The replacement formula, Final ratio of B =



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Initial ratio of $B \left[1 - \frac{R}{V}\right]$.

Where R is amount of liquid replaced,

$$\begin{aligned} \frac{11}{15} &= \frac{7}{9} \times \left[1 - \frac{10}{V}\right] \\ \frac{33}{35} &= \left[1 - \frac{10}{V}\right] \\ \left[1 - \frac{2}{35}\right] &= \left[1 - \frac{10}{V}\right] \\ \frac{2}{35} &= \frac{10}{V} \\ V &= 5 \times 35 = 175 \end{aligned}$$

Hence, option b is correct.

Q6 Text Solution:

As the mixture is replaced by milk, use the replacement formula for water.

Final amount of water = Initial amount of water
x

$$\begin{aligned} \left[1 - \frac{R}{V}\right]^n &\\ \frac{4}{9} &= \frac{5}{9} \left[1 - \frac{20}{V}\right] \\ V &= 5 \times 20 = 100 \text{ litres} \end{aligned}$$

Hence, option b is correct.

Q7 Text Solution:

Quantity of milk = 60% of 60 = 36 lit.

Quantity of water 24 lit.

Let the quantity of additional water added be x lit. Then, according to the question,

$$24 + x = \frac{50}{100} \text{ of } (60 + x) \text{ or, } 24 + x = 30 + \frac{x}{2}$$

Or, $x = 12$ lit.

Hence, option b is correct.

Q8 Text Solution:

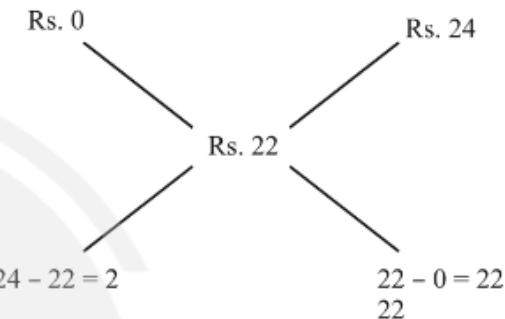
Quantity of sand in mixture = $\frac{3}{10} \times 600 = 180$
grams

Quantity of cement in mixture
= $600 - 180 = 420$ grams
According to question,
Desired ratio
= $(420 + 80) : (180 + 20) = 5 : 2$
Hence, option b is correct.

Q9 Text Solution:

S.P. of 1 unit mixture = Rs. 27.50
C.P. of 1 unit of mixture = $\frac{27.50}{1.25} = \text{Rs. 22}$

As water is available free of cost, its price will be
Rs. 0



Therefore, the required ratio will be 2 : 22 or 1 : 11

Q10 Text Solution:

Let, initially amount of water and milk mixed be ' $2x$ ' and ' $15x$ ' litres, respectively.

$$\text{So, } \frac{(2x+14)}{15x} = \frac{1}{4}$$

$$8x + 56 = 15x$$

$$7x = 56, x = 8$$

So, the amount of water mixed initially
= $2x = 16$ litres

Hence, option a is correct.

Q11 Text Solution:

Suppose there are 176 units of each mixture
(LCM of 7 + 4 and 5 + 11)

Mixture A content = 64 units → Lemon juice
and 112 units → water Mixture B content = 55
units → Sprite and 121 units → water Now, 25%
of mixture A + 50% of mixture B

lemon juice (from mixture A) = 25% of 64 = 16



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water (from mixture B) = 25% of 112 + 50% of 121 = 88.5
 sprite (from mixture B) = 50% of 55 = 27.5
 Therefore the required ratio is 16 : 88.5 : 27.5 or 32 : 177 : 55

Q12 Text Solution:

$$\text{Quantity of milk in mixture 'A'} \\ = \frac{12}{19} \times 760 = 480\text{ml}$$

$$\text{Quantity of water in mixture 'A'} \\ = 760 - 480 = 280\text{ml}$$

Quantity of milk in mixture 'B'

$$= \frac{13}{25} \times 500 = 260\text{ml}$$

Quantity of water in mixture 'B'

$$= \frac{12}{25} \times 500 = 240\text{ml}$$

Desired ratio

$$= (0.60 \times 480 + 0.40 \times 260) : (0.60 \times 280 + 0.40 \times 240) = 392 : 264 = 49 : 33$$

Q13 Text Solution:

$$\text{Quantity of milk in initial mixture} \\ = 250 \times 0.6 = 150 \text{ litres}$$

$$\text{Quantity of water in initial mixture} \\ = 250 - 150 = 100 \text{ litres}$$

Let the quantity of milk and water which is added in the mixture be ' x ' litres and ' $2x$ ' litres, respectively.

According to the question,

$$\frac{(150 + x)}{(100 + 2x)} = \frac{9}{8}$$

$$\text{Or, } 1200 + 8x = 900 + 18x$$

$$\text{Or, } x = 30$$

Therefore, quantity of milk which is added in the mixture = 30 litres.

Hence, option b is correct.

Q14 Text Solution:

Cost price of the mixture

$$= \left(\frac{12600}{6} \right) \times 5 = \text{Rs. 10500}$$

Cost price of A in the mixture will be = $5 \times 1050 = 5250$

Cost price of wheat B in the mixture = $10500 - 5250 = \text{Rs. 5250}$

Quantity of wheat B in the mixture = $5250 \div 6 = 875 \text{ kg.}$

Hence, option d is correct.

Q15 Text Solution:

Quantity of milk in the initial mixture = 75% of 480 = 360 litres

Quantity of water in the initial mixture = $480 - 360 = 120 \text{ litres}$

To get minimum quantity of water to be added, we need to take 40% of water in the final mixture.

So, total quantity of mixture after adding minimum amount of water = $\frac{360}{0.6} = 600 \text{ litres}$

So, minimum quantity of water added to the mixture = $600 - 480 = 120 \text{ litres}$

Hence, option b is correct.

Q16 Text Solution:

In Alloy P, G : S : B = 5 : 2 : 3

In Alloy Q, G : S = x : y,

In resultant alloy, G : S : B = 5 : 4 : 1

Since Bronze can be obtained from Alloy P only, so concentration of bronze in Alloy P and resultant alloy is constant.



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$$\begin{aligned} G : S : B \text{ in resultant} &= (5 : 4 : 1)3 = 15 \\ &: 12 : 3 \end{aligned}$$

In Alloy Q,

Ratio of Gold : Ratio of Silver

$$= (15 - 5) : (12 - 2) = 10 : 10 = 1 : 1$$

i.e., Concentration of Gold = Concentration of Silver = 50%.

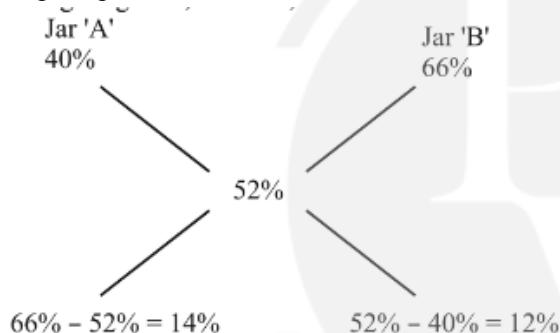
Hence, option d is correct.

Q17 Text Solution:

Percentage of quantity of salt in the container

$$= 100 \times \left(\frac{13}{25} \right) = 52\%$$

Using alligation, we have;



Therefore, 260 litres has been drawn in the ratio 14:12 or 7:6

$$\text{Thus, quantity taken from Jar A} = \frac{260}{13} \times 7 =$$

140 litres

Q18 Text Solution:

Let the quantity of water in the 324 litre mixture = '3y' litres

$$\text{Then, quantity of honey in the 324 litre mixture} = \left(\frac{5}{3}\right) \times 3y = '5y' \text{ litres}$$

$$\text{Quantity of milk in the 324 litre mixture} = (3y + 60) \text{ litres}$$

$$\text{So, } 3y + 5y + 3y + 60 = 324$$

$$\text{Or, } 11y + 60 = 324$$

$$\text{Or } y = (324 - 60) \div 11 = 24$$

So, quantity of milk, water and honey in the 324 litres mixture is 132 litres, 72 litres and 120 litres, respectively.

So ratio of quantity of milk, water and honey in the mixture, respectively

$$= 132 : 72 : 120 = 11 : 6 : 10 \text{ After replacing 54 litres of the mixture with 12 litres milk and 18 litres water, Quantity of milk in the resultant mixture} = (324 - 54) \times \left(\frac{11}{27}\right) + 12 = 122 \text{ litres}$$

$$\text{Quantity of water in the resultant mixture} = (324 - 54) \times \left(\frac{6}{27}\right) + 18 = 78 \text{ litres}$$

$$\text{Quantity of honey in the resultant mixture} = (324 - 54) \times \left(\frac{10}{27}\right) = 100 \text{ litres}$$

So, percentage of water in the mixture

$$\begin{aligned} &= \{78 \div (122 + 78 + 100)\} \times 100 \\ &= \left(\frac{78}{300}\right) \times 100 = 26\% \end{aligned}$$

Hence, option c is correct.

Q19 Text Solution:

The packet initially contains $7x$ and $5x$ liters of milk and water respectively.

Milk is considered as A

Quantity of A in mixture left

$$\begin{aligned} &= \left[7x - \left\{ \left(\frac{7}{12}\right) \times 9 \right\} \right] \text{ lit} \\ &= 7x - \left(\frac{21}{4}\right) \text{ liters} \end{aligned}$$

$$\text{Quantity of B in mixture left} = 5x - \left[\left(\frac{5}{12}\right) \times 9\right]$$

$$= 5x - \left(\frac{15}{4}\right) \text{ liters}$$

$$\text{Therefore } \frac{\left(7x - \frac{21}{4}\right)}{\left\{5x - \left(\frac{15}{4}\right) + 9\right\}} = \frac{7}{9}$$



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$$\frac{(28x - 21)}{(20x + 21)} = \frac{7}{9}$$

$$(252x - 189) = 140x + 147$$

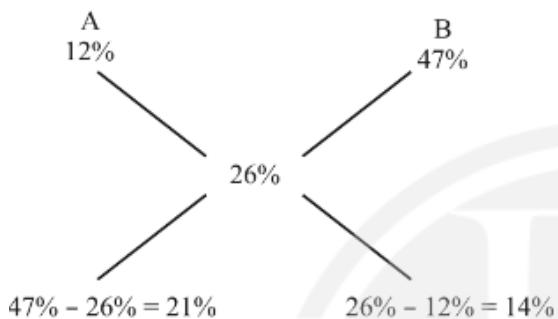
$$112x = 336$$

$$x = 3$$

So, the packet contains 21 liters of A

Hence, option d is correct.

Q20 Text Solution:



So, 'A' and 'B' were mixed in ratio of 3 : 2, respectively.

Since, total solution of both the jars contained equal quantity of the mixture.

So, required percentage
 $= \left\{ \frac{(5-2)}{5} \right\} \times 100 = 60\%$

Hence, option a is correct.

Q21 Text Solution:

S.P. of 1 kg of mixture = Rs. 24

Gain = 20%

C.P. of 1 kg of mixture = $\left(\frac{100}{120} \right) \times 24 = \text{Rs. } 20$

C.P. of 1 kg of the 1st kind of pulses = 22

C.P. of 1 kg of pulses of 2nd kind = 16

Mean price = 20

C.P. of 1 kg of pulses of 1st kind
kind (22)

C.P. of 1 kg of pulses of 2nd kind
kind (16)

Mean Price
(20)

$$20 - 16 = 4$$

$$22 - 20 = 2$$

$$\text{Required ratio} = 4 : 2 = 2 : 1$$

Now if the quantity of the second quantity is 25 kg, quantity of first kind will be double the same i.e. 50 kg

Q22 Text Solution:

Let the 3 bottles contain 1 l, 2 l and 3l of the mixture respectively.

Quantity of Appy Fizz in bottle 1 = $\frac{2}{5} l$

Quantity of Appy Fizz in bottle 2 = $2 \times \frac{4}{11} = \frac{8}{11} l$

Quantity of Appy Fizz in bottle 3 = $3 \times \frac{1}{3} = 1 l$

Total quantity of Appy Fizz = $\frac{2}{5} + \frac{8}{11} + 1 = \frac{117}{55} l$

Fraction of Appy Fizz = $\frac{117}{55} \times 1/6 = \frac{39}{110}$

Fraction of water = $\frac{71}{110}$

Ratio of water and Appy Fizz = $\frac{71}{39}$

Hence, option d is correct.

Q23 Text Solution:

Quantity of mixture (milk + water) remaining after removing $(x - 64)$ litres = $x + 32 - (x - 64) = 96$ litres.

Let the quantity of milk and water in 96 litres of the mixture be 'y' litres and $(96 - y)$ litres
According to the question,

$$\left\{ \frac{(y+4)}{(96-y)} \right\} = \left(\frac{60}{40} \right) = \left(\frac{3}{2} \right)$$



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Or, $2y + 8 = 288 - 3y$

Or, $5y = 280$

$$\text{So, } y = \left(\frac{280}{5}\right) = 56$$

So, ratio of quantity of milk to that of water in the original mixture

$$= 56 : (96 - 56) = 56 : 40 = 7 : 5$$

So, quantity of water in the $(x + 32)$ litre mixture

$$= 84 \times \left(\frac{5}{7}\right) = 60$$

$$\text{So, } 84 + 60 = x + 32$$

$$\text{Or, } x + 32 = 144$$

$$\text{So, } x = 144 - 32 = 112$$

Hence, option c is correct.

Q24 Text Solution:

In a mixture of x litres,

$$\text{Ratio of milk and water} = 120 : 100 = 6 : 5$$

$$\text{Quantity of milk} = \left(\frac{x}{11}\right) \times 6$$

$$\text{Quantity of water} = \left(\frac{x}{11}\right) \times 5$$

In another mixture of 180 litres,

$$\text{Ratio of milk and water} = 100 : 150 = 2 : 3$$

$$\text{Quantity of milk} = \left(\frac{180}{5}\right) \times 2 = 72 \text{ litres}$$

$$\text{Quantity of water} = \left(\frac{180}{5}\right) \times 3 = 108 \text{ litres}$$

According to the question,

$$\begin{aligned} & \left\{ \left(\frac{x}{11}\right) \times 6 + 72 \right\} : \left\{ \left(\frac{x}{11}\right) \times 5 + 108 \right\} \\ & \quad = 10 : 11 \\ & \quad 11 \left\{ \left(\frac{x}{11}\right) \times 6 + 72 \right\} \\ & \quad = 10 \left\{ \left(\frac{x}{11}\right) \times 5 + 108 \right\} \end{aligned}$$

$$6x + 792 = \frac{50x}{11} + 1080$$

$$6x - \frac{50x}{11} = 1080 - 792$$

$$\frac{16x}{11} = 288$$

$$x = 198$$

Hence, option a is correct.

Q25 Text Solution:

Given, solution type-first = x litres-chemical A and $(100 - x)$ litres-chemical B

Solution type-second = 70 litres - chemical A
30 litres - chemical B

Now, according to the question,

$$\begin{aligned} (x + 70) : (100 - x + 30) &= 2 : 1 \\ \Rightarrow x + 70 &= 260 - 2x \\ \Rightarrow 3x &= 190 \Rightarrow x = \frac{190}{3} \\ \text{or } x &\approx 63.3 \end{aligned}$$

Ans. b

Q26 Text Solution:

Let the quantity of acetone in mixture 'A' and 'B' be $4x$ litres and $5x$ litres respectively.

Let the quantity of water in mixture 'A' be y litres. Quantity of water in mixture 'B' be $(y + 120)$ litres According to the question,

$$4x + y = 660$$

$$\text{And, } 5x + y = 720$$

On solving equation (1) and (2), we get

Quantity of acetone in mixture 'B' = $5x = 300$ litres

Quantity of water in mixture 'B'

$$= y + 120 = 540 \text{ litres}$$

$$\begin{aligned} \text{Required percentage} &= \left\{ \frac{(540 - 300)}{300} \right\} \\ &\times 100 = 80\% \end{aligned}$$

Hence, option b is correct.

Q27 Text Solution:



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After removing $(x - 87)$ litres from $(x + 18)$ litres of the mixture, remaining quantity of the mixture $= x + 18 - (x - 87) = 105$ litres

Let the quantity of milk in the 105 litres = 'k' litres Then, quantity of water in the 105 litres $= (105 - k)$ litres

According to the question,

$$(105 - k + 3) = k \times 1.4$$

$$\text{Or, } 108 - k - 1.4k = 0$$

$$\text{Or, } k = 108 \div 2.4 = 45$$

So, quantity of milk and water in the 105 litre mixture are 45 litres and 60 litres respectively.

So, ratio of quantity of milk to water in the initial mixture is $45 : 60 = 3 : 4$ respectively.

Let the quantities of milk and water in the $(x + 18)$ litre mixture be $3y$ litres and $4y$ litres, respectively. According to the question,

$$4y = 3y + 24$$

$$y = 24$$

$$\text{Also, } 4y + 3y = x + 18$$

$$7y = x + 18$$

$$7(24) = x + 18$$

$$168 - 18 = x$$

$$x = 150$$

Q28 Text Solution:

Quantity of milk in 750ml of mixture $= \left(\frac{8}{15}\right) \times 750 = 400\text{ml}$

Quantity of water in 750ml of mixture $= \left(\frac{7}{15}\right) \times 750 = 350\text{ml}$

According to question;

$$\frac{(0.60 \times 400 + x)}{(0.60 \times 350 + x - 75)} = \frac{11}{8}$$

$$\text{Or, } \frac{(240+x)}{(210+x-75)} = \frac{11}{8}$$

$$\text{Or, } 1920 + 8x = 1485 + 11x$$

$$\text{Or, } 3x = 435$$

$$\text{Or, } x = 145$$

Hence, option b is correct.

Q29 Text Solution:

Let the quantity of the mixture in container A = x litres

Quantity of the mixture in container B = $2x$ litres According to the question,

Required ratio

$$\begin{aligned} &= \left(x \times 40\% \times \frac{5}{8} + 2x \times 50\% \times \frac{3}{5} \right) \\ &: \left(x \times 40\% \times \frac{3}{8} + 2x \times 50\% \times \frac{2}{5} \right) \\ &= \left(\frac{x}{4} + \frac{3x}{5} \right) : \left(\frac{3x}{20} + \frac{2x}{5} \right) \\ &= 17 : 11 \end{aligned}$$

Hence, option b is correct.

Q30 Text Solution:

Let the quantity of acetone and water in the tank be $3x$ litres and $2x$ litres respectively.

According to the question,

$$\frac{(3x+0.75 \times 240)}{(2x+0.4 \times 150)} = \frac{12}{5}$$

$$\text{Or, } \frac{(3x+180)}{(2x+60)} = \frac{12}{5}$$

$$\text{Or, } 15x + 900 = 24x + 720$$

$$\text{Or, } 9x = 180$$

$$\text{Or, } x = 20 \text{ litres}$$

Therefore, total quantity of acetone in the resultant mixture $= 3x + 180 = 240$ litres.

Hence option c is correct.



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