

## {A} :- MIXTURE & ALLIGATION :- <6>

1. (a) CP of the mixture :  $\left(\frac{100 \times 1}{125}\right) = \frac{16}{5}$

$\therefore$  By Alligation:

|                       |                                      |          |  |                                   |
|-----------------------|--------------------------------------|----------|--|-----------------------------------|
| (M)<br>$\frac{16}{5}$ | $\frac{16}{5}$                       | (W)<br>0 |  | $\frac{16}{5} : \frac{7}{5}$      |
|                       | $\frac{16}{5}$                       |          |  | $16 : 7$                          |
|                       | $16 : \left(5 - \frac{16}{5}\right)$ |          |  | $\therefore \boxed{\frac{9}{25}}$ |

2. (b) In 1st mixture :- Milk =  $\left(3 \times \frac{3}{5}\right) = \frac{9}{5}$  litres

Water =  $\left(3 \times \frac{2}{5}\right) = \frac{6}{5}$  litres

In 2nd mixture :- Milk =  $\frac{4K}{7}$  litres ; Water =  $\frac{5K}{7}$  litres

$\therefore$  According to the question :-

$$\left(\frac{9}{5} + \frac{4K}{7}\right) = \left(\frac{6}{5} + \frac{5K}{7}\right) \Rightarrow K\left(\frac{4}{7} - \frac{5}{7}\right) = \left(\frac{6}{5} - \frac{9}{5}\right) \Rightarrow K = \frac{37}{5}$$

$\therefore$  Required answer :  $\boxed{5 \frac{2}{5} \text{ litre}}$

|                                       |                                          |                                           |  |                                |  |               |
|---------------------------------------|------------------------------------------|-------------------------------------------|--|--------------------------------|--|---------------|
| (Milk) <sub>1</sub><br>$\frac{7}{10}$ |                                          | (Milk) <sub>2</sub><br>$\frac{2}{5}$      |  | $\frac{1}{5} : \frac{7-6}{10}$ |  | $\boxed{2:1}$ |
|                                       | $\frac{3}{5}$                            |                                           |  | $\frac{1}{5} : \frac{1}{10}$   |  |               |
|                                       | $\left(\frac{3}{5} - \frac{2}{5}\right)$ | $\left(\frac{7}{10} - \frac{3}{5}\right)$ |  | $1 : \frac{1}{2}$              |  |               |

1. (b) Ratio of Milk and Water (Initially) is :  $\rightarrow 60 : 40 = 3 : 2$

Now, Milk =  $\left(80 \times \frac{3}{5}\right) = 48$  litre and Water = 32 litre.

After given 20 litre of mixture to the Customer :-

Milk at present =  $\left\{48 - \left(20 \times \frac{3}{5}\right)\right\} = 36$  litre

Water at present =  $\left\{32 - \left(20 \times \frac{2}{5}\right)\right\} = 24$  litre.

Now, after adding 20 litre of Water :-

Milk = 36 litre ; Water =  $(24 + 20)$  litre = 44 litre.

M : W =  $36 : 44 = \boxed{9 : 11}$

# (A) MIXTURE & ALLIGATION :- (7)

5. (C) (Milk) (Water)

$$\begin{array}{ccc} 80 & & 0 \\ & \swarrow \quad \searrow & \\ & 72 & \\ & \swarrow \quad \searrow & \\ 72 & : & 8 \end{array} \quad \begin{array}{l} 9:1 \\ \therefore 9 = 70 \text{ Ltrs.} \\ 1 = \boxed{70 \text{ Ltrs}} \end{array}$$

6. (b) let the respective weight of three varieties are  $x$ ;  $x$  and  $2x$  kg. Now let price of third variety be  $\text{₹ } y$ .

$\therefore$  According to the question:

$$\begin{aligned} (110x + 95x + 2xy) &= (4x \times 115) \Rightarrow 205 + 2y = 460 \\ \Rightarrow 205x + 2xy &= 460x \Rightarrow 2y = 255 \\ &\Rightarrow y = \boxed{127.5} \end{aligned}$$

7. (C) (1st part) (2nd part)

$$\begin{array}{ccc} 8 & & 14 \\ & \swarrow \quad \searrow & \\ & 12 & \\ & \swarrow \quad \searrow & \\ 2 & : & 4 \\ 1 & : & 2 \end{array} \quad \begin{array}{l} \therefore 3 = 60 \text{ kg} \\ 1 = 20 \text{ " } \\ 2 = \boxed{40 \text{ kg}} \end{array}$$

8. (b) Required Ratio of Milk and Water :-

$$\left\{ \left( 60 \times \frac{5}{12} \right) + \left( 80 \times \frac{5}{16} \right) \right\} : \left[ \left\{ \left( 60 \times \frac{5}{12} \right) + \left( 80 \times \frac{5}{16} \right) \right\} + 30 \right]$$

$$70 : 100 = \boxed{7:10}$$

9. (b) (Milk) : (Water)

$$\left\{ \left( 20 \times \frac{1}{2} \right) + \left( 20 \times \frac{3}{7} \right) + \left( 20 \times \frac{4}{9} \right) \right\} : \left\{ \left( 20 \times \frac{3}{7} \right) + \left( 20 \times \frac{4}{9} \right) + \left( 20 \times \frac{5}{9} \right) \right\}$$

$$\left( 8 + \frac{60}{7} + \frac{80}{9} \right) : \left( 12 + \frac{80}{7} + \frac{100}{9} \right)$$

$$\left( \frac{504 + 540 + 560}{63} \right) : \left( \frac{756 + 720 + 700}{63} \right)$$

$$1604 : 2176$$

$$\boxed{401 : 544}$$



## (A) :- MIXTURE & ALLEGATION :- <8>

10(c) Let the quantity of Zinc which be melted is  $x$  kg.

$$\therefore \left\{ \left( 20 \times \frac{1}{8} \right) + \left( 32 \times \frac{3}{8} \right) \right\} \div \left\{ \left( 20 \times \frac{4}{8} \right) + \left( 32 \times \frac{1}{8} \right) + x \right\} = 3:5$$

$$\Rightarrow \frac{28}{24+x} = \frac{3}{5} \Rightarrow 72 + 3x = 140 \Rightarrow x = \boxed{\frac{68}{3} \text{ kg}}$$

11. (c) By the rule of allegation :-

$$\begin{array}{cc} \text{(a)} & \text{(b)} \\ 145 & 154 \\ & \swarrow \searrow \\ & 165 \\ & \swarrow \searrow \\ 11 & : & 20 \end{array}$$

$$\begin{array}{cc} \text{(b)} & \text{(c)} \\ 154 & 170 \\ & \swarrow \searrow \\ & 165 \\ & \swarrow \searrow \\ 5 & : & 11 \end{array}$$

$$\begin{array}{l} a:b = 11:20 \\ b:c = 5:11 \end{array}$$

$$\begin{array}{l} a:b:c = 55:100:220 \\ = \boxed{11:20:44} \end{array}$$

12. (c) M:W = 6:4 = 3:2

$$\begin{array}{cc} \text{(M)} & \text{(W)} \\ \frac{3}{5} & 0 \\ & \swarrow \searrow \\ & \frac{1}{2} \\ & \swarrow \searrow \\ \frac{1}{2} & : & \left( \frac{3}{5} - \frac{1}{2} \right) \end{array}$$

$$\begin{array}{l} \frac{1}{2} : \frac{1}{10} \\ 1 : \frac{1}{5} \\ 5 : 1 \end{array}$$

$\therefore$  Required answer is:

$$\boxed{\frac{1}{6}}$$

$$\begin{array}{cc} \text{(1st part)} & \text{(2nd part)} \\ 10 & 18 \\ & \swarrow \searrow \\ & 16 \\ & \swarrow \searrow \\ 2 & : & 6 \\ 1 & : & 3 \end{array}$$

$$\left( \frac{1}{4} \times 1500 \right) \text{ kg} = \boxed{375 \text{ kg}}$$

$$\begin{array}{cc} \text{(Milk)}_1 & \text{(Milk)}_2 \\ \frac{3}{5} & \frac{7}{10} \\ & \swarrow \searrow \\ & \frac{7}{11} \\ & \swarrow \searrow \\ \left( \frac{7}{10} - \frac{7}{11} \right) & : & \left( \frac{7}{11} - \frac{3}{5} \right) \end{array}$$

$$\begin{array}{l} \frac{7}{10 \times 11} : \frac{35-33}{11 \times 5} \\ \frac{7}{2} : 2 \\ \boxed{7:4} \end{array}$$

15. (c) Suppose initially there is 100 litre of milk costing ₹ 100. Now he gains 25% means in 100 litres of milk he add 25 litre water; so percentage of milk in the mixture =  $\left( \frac{100}{125} \right) \times 100 = \boxed{80\%}$

# (A) - MIXTURE & ALLOCATION - <9>

16. (C) Dry fruit obtained from 150 kg of fresh fruit =  $(\frac{25}{100} \times 150)$  kg

Let x kg of dry fruit obtained from 150 kg of fresh fruit.

∴ According to the question:  $\frac{25 \times 150}{100} = \frac{80 \times x}{100}$

$x = 46.875 \approx \boxed{47 \text{ kg}}$

17. (b) 

|                 |                  |                                     |
|-----------------|------------------|-------------------------------------|
| (Price of Milk) | (Price of Water) |                                     |
| 10              | 0                | 4:1                                 |
| 8               | 8                | ∴ 4 = 50 litres.                    |
| 8               | 2                | 1 = $(\frac{50}{4}) = \boxed{12.5}$ |

18. (b) Let x litres of Water must be added.  $\Rightarrow 26 + 2x = 30$

∴  $\frac{(6 \times 5000) + (7 \times 6000)}{(13 + x)} = 4800$   $\Rightarrow 2x = 4$

$\Rightarrow \frac{2}{4800(13+x)} = \frac{3}{72000}$   $\Rightarrow x = \boxed{2}$

19. (C) CP of the mixture =  $(\frac{34.8 \times 100}{120}) = \text{₹ } 29$

(a) 25 (b) 35

25 35

6 4

3:2

20. (d) 

|                 |                  |                                           |
|-----------------|------------------|-------------------------------------------|
| (Price of milk) | (Price of Water) |                                           |
| 50              | 0                | 22 = 10                                   |
| 44              | 44               | 1 = $\frac{10}{22}$                       |
| 44              | 6                | 3 = $\frac{30}{22} = \frac{15}{11}$       |
| 22              | 3                | ∴ $\boxed{1 \frac{1}{11} \text{ litres}}$ |

21. (a) Milk : Water = 80 : 20 = 4 : 1

∴ 

|               |                               |                                      |
|---------------|-------------------------------|--------------------------------------|
| (Milk)        | (Water)                       |                                      |
| $\frac{4}{5}$ | 0                             | $\frac{3}{4} : \frac{1}{5 \times 4}$ |
| $\frac{3}{4}$ | $\frac{3}{4}$                 | $3 : \frac{1}{5}$                    |
| $\frac{3}{4}$ | $(\frac{4}{5} - \frac{3}{4})$ | 15:1                                 |

∴ Quantity of Water:  $\rightarrow 25 \times \frac{1}{16} = \boxed{1.5625 \text{ litres}}$



# (A) :- MIXTURE & ALLIGATION:- <10>

22. (b) Milk left =  $60 \left(1 - \frac{9}{15}\right) = \left(60 \times \frac{196}{15 \times 15}\right) = 52.26 \text{ lit}$

23. (a) CP of the mixture =  $\left(\frac{8.1 \times 100}{90}\right) = 59$

|                   |                |                                                                                                           |
|-------------------|----------------|-----------------------------------------------------------------------------------------------------------|
| 1st Wheat<br>8.70 | 2nd Wheat<br>x | $\therefore \frac{(x-9)}{(9-8.7)} = \frac{2}{3}$<br>$\Rightarrow 3x - 27 = .60$<br>$\Rightarrow x = 9.20$ |
| 2                 | 3              |                                                                                                           |
| :                 | :              |                                                                                                           |
| 2                 | 3              |                                                                                                           |

24. (b) Bronze : Copper = 4 : 6 = 2 : 3

|                                |                                          |                                                                                      |
|--------------------------------|------------------------------------------|--------------------------------------------------------------------------------------|
| (Bronze)                       | (Copper)                                 | $\frac{2}{5} : \frac{1}{5}$<br>$2 : 1$<br>$\therefore$ Required ans is $\frac{1}{3}$ |
| $\frac{2}{5}$                  | 1                                        |                                                                                      |
| $\left(1 - \frac{3}{5}\right)$ | $\left(\frac{3}{5} - \frac{2}{5}\right)$ |                                                                                      |
| $\frac{3}{5}$                  | $\frac{3}{5}$                            |                                                                                      |

25. (i) Let the total mixture be 100x litres.

$\therefore$  Milk = 75x and Water = 25x.

$\therefore$  Ratio of Milk and Water be  $\rightarrow 3 : 1$

According to the question:-

$$\Rightarrow \frac{75x - \left(\frac{3}{2} \times \frac{3}{4}\right)}{\left\{25x - \left(\frac{1}{2} \times \frac{1}{4}\right)\right\} + 5} = \frac{5}{2}$$

$$\Rightarrow \frac{75x - 9}{25x + 2} = \frac{5}{2}$$

$$\Rightarrow 150x - 18 = 125x + 10$$

$$\Rightarrow 25x = 28$$

$$\Rightarrow x = \frac{28}{25}$$

Milk Originally present in the mixture

$$75x = \left(75 \times \frac{28}{25}\right)$$

$$= 84 \text{ litres}$$