## **MIXTURE AND ALLIGATION**

Direction: Read the following questions carefully and choose the right answer.

1. In 4 litres of milk and water mixture, the concentration of milk is 80%. A woman takes out 20% of the total mixture and add the same quantity of water. With the total quantity of new mixture, she wants to prepare coffee where the concentration of water should be 60%. How many litres of more water will she require to prepare coffee?

A. 2.6 litres B. 2.4 litres C. 2 litres D. 2.5 litres E. None of these

 A farmer mixes two varieties of rice of price Rs. 36 per kg and Rs. 24 per kg in the ratio of 1: 2, respectively. He sold the mixture for Rs. 2100 to earn a profit of 25%, then find the quantity of rice of cost Rs. 24 per kg used in the mixture.

A. 20 kg B. 30 kg C. 40 kg D. 50 kg E. 60 kg

3. A vessel contains 208 litres mixture of milk and water mixed in the ratio 11 : 5 respectively. '8x' litres of mixture is taken out of the vessel and replaced with '3x - 4' litres of water so that the ratio of milk to water in the vessel becomes 4 : 3 respectively. Find the difference between the final quantities of milk and water in the vessel.

A. 21 litres B. 22 litres C. 23 litres D. 24 litres E. 25 litres

4. A container contains a mixture of liquid A and liquid B in the ratio 12 : 13 respectively. Some amount of mixture have been withdrawn and some amount of liquid C is added and then the ratio of liquid A, liquid B and liquid C become 24 : 26 : 29 respectively. After adding liquid C, the total amount of mixture in the container is 10 litres less than the initial amount of mixture. If the amount of liquid A taken out from container is 146 litres less than the amount of liquid C added to the container, then find the amount of liquid B initially in the container.

A. 416 litres B. 650 litres C. 468 litres D. 325 litres E. None of these

5. Two vessels A and B of equal volume contain milk and water in the ratio 3 : 2 and 2 : 1 to their brim respectively. Two litres of the solution from vessel A and three litres of the solution from vessel B are poured into a big empty vessel C. If the solution in C occupied 40% of the capacity of C, what proportion of the volume of vessel C should be the volume of water that shall be added so that the ratio of milk and water in vessel C becomes 1 : 1?

A. 
$$\frac{21}{125}$$
 B.  $\frac{2}{25}$  C.  $\frac{4}{75}$  D.  $\frac{14}{125}$  E. None of these

6. There are two containers A and B containing mixture of milk and water. The concentration of milk in container A and B is (x - 5) % and (x + 10)% respectively. If both mixtures are mixed together in a certain ratio to get 85 litres of mixture in which the concentration of milk is (x + 4)%, find the amount of mixture used from container B.

7. Royal asian paints mixes Pink and White in the ratio 4 : 5 in a tank. However after mixing, the company finds that the resultant shade has less of Pink and removes 18 litres of the mixture and add equivalent quantity of Pink. The shade thus obtained has Pink and White in the inverse ratio. How many litres of mixture was there initially in the tank?

A. 72 litres B. 80 litres C. 90 litres D. 95 litres E. 86 litres

8. Mixture A of Rasna and water contains 80% Rasna. If another mixture B of 78 litres containing Rasna and water in the ratio of 7 : 6, respectively is poured in mixture A such that the quantity of Rasna in the resultant mixture becomes 92 litres, then find the quantity of mixture A initially.

A. 65 litres B. 61 litres C. 63 litres D. 60 litres E. 62.5 litres

9. A milkman mixes 45 liters of 80% pure milk with 60% pure milk and sells the mixture at the cost price of pure milk making a profit of 33.33%. What is the quantity of 60% pure milk he mixed?

A. 16 liters	B. 20 liters	C. 12 liters	D. 15 liters	E. None of these
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10. An alloy of aluminium, copper and Iron contains 85% aluminium, 8% copper and 7% iron. A second alloy of aluminium and iron melted with the first and the mixture then contains 75% aluminium, 5% copper and 20% iron. Find the percentage of aluminium in the second alloy.

A. 49.4% B. 58.33% C. 53.75% D. 62.6% E. None of these

11. A milkman completely fills his 24 liter cistern with two type of milks A and B in the ratio 7 : 5. The cost price of type A milk is Rs.45 per liter. If he sold this mixture at the rate of Rs.56 per liter at a profit of 12%, then find the per liter cost price of type B milk.

A. Rs. 54 B. Rs. 47 C. Rs. 62 D. Rs. 57 E. None of these

12. There are two mixtures of alcohol and water. In 48 L of first mixture 32 L is alcohol while in 32 L of second mixture 20 L is alcohol. If these mixtures are mixed in a large container in such a way that per cent of water in final mixture becomes 36.8%, then find that in what ratio these two mixtures are mixed to form final mixture?

A. 2 : 5 B. 21 : 104 C. 201 : 104 D. 201 : 14 E. None of these

13. From 'A' kg of pure tea a shopkeeper removes A% of the mixture (Either pure tea or adulterated tea) and replaces it with same quantity of adulteration. If he repeated this process once more and now the amount of pure tea remaining in the mixture is (90% of 40% of A) kg, then find the value of A.

A. 60%	B. 50%	C. 40%	D. 30%	E. None of these
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14. A milkman makes 80% profit by selling milk mixed with water at Rs. 2/- litre. Compute the ratio of milk and water in the sold mixture if the cost price of Re. 1/- litre pure milk is 100/9.

A. 9 : 1 B. 1 : 9 C. 7 : 8 D. 8 : 7 E. None of these

15. A chaiwala has 2 types of mixture of tea with him. In 56 kg of first mixture ratio of tea to impurity is 5 : 2 and in 44 kg of second mixture the ratio of tea to impurity is 3 : 1. If he mixes these two mixture with 17 kg of pure tea in a large container, then find the ratio of tea to impurity in the large container.

A. 10 : 3 B. 3 : 1 C. 73 : 27 D. 5 : 3 E. None of these

16. Two mixtures marked with A and B are contained in two separated vessels. Mixture A contains ingredients P, Q and R in a ratio of 3 : 5 : 2 respectively and mixture B contains ingredients P and Q in a ratio of 4 : 5 respectively. We have to make 540 litres of a new mixture by adding the mixtures A and B in a ratio of 1 : 2. What will be the quantity of ingredient P in the final mixture? (test id 266)

A. 119 L B. 163 L C. 214 L D. 231 L E. None of these

17. In two solutions, the ratio of milk and water in the first solution is 5 : 2 respectively and the ratio of water and milk in the second solution is 4 : 3 respectively. How many litres of the first solution and the second solution, respectively should be mixed together to obtain 28 litres of new solution with equal quantity of milk and water?

A. 7 litres and 21 litresB. 14 litres and 14 litresC. 21 litres and 7 litresD. 12 litres and 16 litresE. None of these

18. A and B are two milk containers with 80% and 64% concentration of milk respectively. The ratio of capacity of P and Q is 1 : 3. Container P is completely filled by pouring milk from A and B in the ratio 3 : 5. And a container Q is completely filled by pouring milk from A and B in the ratio 1 : 3. P and Q are emptied in a third container S, what is the concentration of milk in S?

A. 66.66% B. 68% C. 69% D. 66% E. 68.5%

**19.** A farmer mixes two varieties of rice of price Rs. 72 per kg and Rs. 48 per kg in the ratio of 1 : 2. He sold the mixture for Rs. 4200 to earn a profit of 25%. Find the quantity of rice of cost Rs. 72 per kg in the mixture.

A. 20 Kg B. 30 kg C. 40 kg D. 50 kg E. 60 kg

**20.** A vessel contains a mixture of acid and aqua in the ratio of 4 : 1. 30% of this mixture is taken out and then 2 litres of aqua is added to the vessel. Further 25% of the mixture is taken out and 3 litres of acid is added. If the initial quantity of the mixture be 100 litres, then find the percentage of aqua in the resultant mixture.

21. From tank T<sub>1</sub> containing 54 litre of mixture of chemical and aqua in ratio of 8 : 1, 18 litre of the mixture is taken out and poured into tank T<sub>2</sub> in which ratio of chemical to aqua is 3 : 1. If difference between total chemical and total aqua in tank T<sub>2</sub> is 30 litre, then find the quantity of initial mixture in tank T<sub>2</sub>.

A. 30 litres B. 28 litres C. 32 litres D. 36 litres E. 40 litres

22. A person bought a 3 litre bottle of wine. On first night, he drank 60ml of its contents and replaced it with water. From the second night onwards he drank 20 ml more than the previous night and replaced it with water. He continued it till the bottle gets empty. What is the total quantity of water used in replacing?

A. 243440 ml B. 223440 ml C. 253450 ml D. 203440 ml E. 222460 ml

23. In Jar 1 there is a mixture of two liquids A and B in ratio of 2 : 5. In Jar 2, there is a mixture of liquid A and B in ratio of 4 : 5. In what ratio, mixture of Jar 1 and Jar 2 should be mixed so that ratio of A and B in resultant mixture becomes 10 : 17?

A. 7 : 8 B. 8 : 9 C. 7 : 3 D. 3 : 7 E. 11 : 13

24. In a mixture, quantity of milk to water are in ratio of 5 : 4. 10 % solution from this mixture was removed and same amount of milk has been added. This process is repeated one more time. What is the percentage of water in the mixture now?

A. 32%
B. 36%
C. 40%
D. 44%
E. None of these

25. A mixture of alcohol and water comprises 60% alcohol. First, 20% of the mixture is replaced with water and then the volume of the resultant mixture is increased by 20% by adding only alcohol. What is approx. percentage of alcohol in the final mixture?

A. 57% B. 59% C. 54% D. 61% E. 48%

26. A milkman orders his servant to mix water in 28 litres pure milk. With that pure milk the servant first mixes 20 litres milk and water solution in which the concentration of milk was 60% and then take out 12 litres from it. Again, he mixes 4 litres of water. What is the concentration of milk in the final mixture?

A. 60% B. 70% C. 64% D. 75% E. None of these

27. In a mixture of Rum and water, the concentration of Rum is 56%. 200 ml of this mixture was mixed with another mixture P of Rum and water, to get 300 ml mixture of Rum and water. The concentration of rum in the new mixture becomes 40%. What should be the concentration of Water in the mixture P?

28. The ratio of water to flour in dough is 2 : 5. While making bread, 90% of water was vapoured then 26 kg of bread was prepared. What was the quantity of flour in the dough (in kg)?

A. 20 B. 25 C. 35 D. 36 E. None of these

**29.** What amount of water (in ml) should be added to reduce 7 ml lotion containing 70% alcohol to a lotion containing 35% alcohol ?

 A. 35 ml
 B. 4 ml
 C. 7 ml
 D. 10.5 ml
 E. Can't be determined

**30.** A container 'P' contains milk and water in the ratio of 4 : 5 respectively and another container 'Q' contains milk and water in the ratio of 3 : 2 respectively. If both the containers are emptied into a larger container R , then what would be the ratio of water and milk in the larger container?

A. 33 : 32 B. 43 : 47 C. 47 : 43 D. 37 : 34 E. None of these

- 31. A cocktail contains a mixture of Brandy and Vodka. The proportion of Brandy present in the cocktail by weight is 7/10th of the total mixture. If, in 150 grams of the mixture, 30 grams of pure Brandy is now added, then the percentage of Brandy in the new mixture becomes:
  - A. 67.5% B. 82.5% C. 80% D. 72.5% E. 75%
- **32.** A container contains a mixture of milk and water in ratio of 3 : 1. Now, 50% of the mixture is taken out and in the resultant mixture quantity of milk is 40 litres more than the quantity of water. Find the Initial quantity of Milk in the mixture.

 A. 120 litres
 B. 150 litres
 C. 90 litres
 D. 75 litres
 E. 180 litres

**33.** In a mixture of 25 litres, the ratio of milk and water is 3: 2 respectively. Another 6 litres of water and 5 litres of milk are added in that mixture. Find milk is how much percent of water in the new mixture?

A. 150% B. 75% C. 100% D. 125% E. None of these

**34.** The respective ratio of milk and water in a solution is 7: 9. After adding 8 litres another solution in which concentration of milk is 50%, the respective ratio of milk and water becomes 4: 5. Find the original quantity of milk present in the solution?

A. 28 litres B. 35 litres C. 56 litres D. 21 litres E. None of these

**35.** A drum contains 60 litres of petrol. From this drum 6 litres of petrol was taken out and replaced by kerosin. This process was repeated further two times. How much petrol is now contained by the drum?

36. The maximum amount of drugs that can be dissolved into 100g of water is 25g. If any more quantity of drug is added it remains undissolved and gets settled down. Now, water is evaporated at the rate of 28g/h from 1kg of the mixture which contains 4% drug. Approximately after how long will it start depositing at the base?

A. 15 h B. 23 h C. 29 h D. 35 h E. 30 h

37. If a milkman mixes 10 litres of water in a mixture then the ratio of water to milk in the new mixture becomes 5 : 6. Again, if he mixes 9 litres of pure milk in the new mixture then the ratio of milk to water becomes 9 : 5. What was the ratio of milk to water in the original mixture?

A. 5 : 4 B. 9 : 5 C. 12 : 7 D. 15 : 13 E. None of these

- 38. A and B are two types of acid solutions containing water and acid in the ratios of 5:4 and 3 : 2 respectively, both by weight. What quantity of solution A, by weight, has to be mixed with 25 kg of acid solution B and 32 kg of acid so that the resultant mixture has 200/3 % of acid content by weight in it?
  - A. 18 Kg B. 15 Kg C. 20 Kg D. 25 Kg E. None of these
- 39. How many kg of wheat costing Rs 15 per kg must be mixed with 38 kg of wheat costing Rs 7 per kg so that there may be a gain of 20% by selling the mixture at Rs. 12.3 per kg?

A. 26 kg B. 28 kg C. 32 kg D. 30 kg E. None of these

40. A 20 litre mixture of milk and water contains milk and water in the ratio 3 : 2. 10 litres of the mixture is removed and replaced with pure milk. This process is done one more time. What is the ratio of milk to water now?

A. 7:5 B. 3:2 C. 9:1 D. 7:1 E. 11:3

41. Deepak sells a product and the ratio of selling price to Profit earned is 3 : 2. If the cost price and selling price is increased by 10% and 12% respectively, then find by how much percent does profit increase?

A. 11% B. 9% C. 7% D. 5% E. None of these

42. A juice seller wants to make a juice cocktail by mixing two flavoured juices. He has a can full of cranberry juice. A certain quantity of cranberry juice is taken out from it and replaced with same quantity of apple juice. The same quantity is again removed from the mixture and replaced with same quantity of apple juice. The mixture now contains 19% apple juice. If the volume of the can is 20 gallons, how many gallons of juice is removed each time?

A. 5 gallons B. 4 ga	llons C. 3 gallons	D. 2 gallons
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43. Plastic and Leather are the two types of materials, used for making two different washers. How many kg of Plastic must be needed along with 11 kg of the first washer and 20 kg of the second so as to produce a new washer containing 40% of Leather, if the ratio of weights of Plastic and Leather in the first washer is 6 : 5 and that in the second washer is 7 : 13?

A. 20 kg B. 10 kg C. 14 kg D. 15 kg E. None of these

44. Two mixtures M<sub>1</sub> and M<sub>2</sub> contain mixture of two types of pulses P<sub>1</sub> and P<sub>2</sub>. M<sub>1</sub> and M<sub>2</sub> contain P<sub>1</sub> and P<sub>2</sub> in the ratio of 4 : 5 and 8 : 3 respectively. M<sub>1</sub> and M<sub>2</sub> are completely mixed to form a third mixture. Now the ratio of P<sub>1</sub> and P<sub>2</sub> in the resultant mixture becomes 8 : 5. Find the amount of pulses P<sub>2</sub> in the M<sub>2</sub>, if the resultant quantity is 364 kg of pulses.

A. 62 kg B. 64 kg C. 60 kg D. 68 kg E. 66 kg

45. A container of 80 litres has orange juice which is filled with liquid part and pulp part. After taking out 70% of the liquid part and 30% of the pulp part, it was found that container is empty by 55%. Find the initial quantity of pulp part in the orange juice.

A. 30 L B. 50 L C. 36 L D. 45 L E. None of these

46. A vessel contains 738 litres of mixture of milk and water mixed in the ratio 13 : 5 respectively. 'x' litres of the mixture is taken out from the vessel and replaced with 30 litres of water so the ratio of milk to water in the vessel becomes 13 : 6 respectively. Find the value of 'x'.

A. 162 B. 180 C. 198 D. 216 E. None of these

47. A mixture X of milk and water contains 87.5% of milk. After 12 litres of water is added, the milk content gets reduced to 50%. If another mixture Y contains the quantity of milk equal to the total quantity of mixture X initially such that the ratio of milk to water is 4: 3, then find the quantity of water in mixture Y.

A. 24 litres B. 20 litres C. 15 litres D. 8 litres E. 12 litres

48. A mixture contains mango juice and water in the ratio 9 : 5 respectively. 28 litres of the mixture is replaced by water. Now the ratio of Mango juice and water became 18 : 17. Find the quantity of mango juice in the initial mixture.

A. 90 litres B. 80 litres C. 60 litres D. 70 litres E. None of these

**49.** A mixture contains milk and water in the ratio 7 : 4. If 22 litres of mixture is replaced with water the ratio of milk and water becomes 5 : 6. Find the quantity of milk in the original mixture.

**50.** Ratio of alcohol and water in a container is 5 : 6. 33 litre of the mixture is replaced by water and the ratio of alcohol and water became 5 : 17. Find the amount of alcohol in the initial mixture.

A. 30 litres	B. 36 litres	C. 25 litres	D. 20 litres	E. None of these

## ANSWERS

1	В	11	D	21	С	31	E	41	E
2	С	12	В	22	В	32	А	42	D
3	В	13	С	23	Α	33	D	43	С
4	Α	14	В	24	В	34	Α	44	С
5	D	15	А	25	Α	35	D	45	А
6	С	16	С	26	D	36	С	46	С
7	С	17	А	27	C	37	E	47	E
8	E	18	Е	28	В	38	А	48	Α
9	D	19	А	29	С	39	Α	49	A
10	В	20	С	30	В	40	С	50	A