Quiz Date: 21st July 2020

Q1. A manufacturer has 200 litres of Acid solution which has 15% acid content. How many litres of solution with 30% Acid content may be added so that Acid content in the resulting mixture will be more than 20% but less than 25%
(a) More than 100 litres but less than 300 litres
(b) More than 120 litres but less than 400 litres
(c) More than 100 litres but less than 400 litres
(d) More than 120 litres but less than 300 litres
(e) None of these

Q2. A jar was full of milk. A person used to draw out 20% of the milk from the jar and replaced it with sugar solution. He has repeated the same process 4 times and thus there was only 512 gm of milk left in the jar, the rest part of the jar was filled with the sugar solution. The initial amount of the milk in the jar was :
(a) 1.25 kg
(b) 1 kg
(c) 1.5 kg
(d) Cannot be determined
(e) None of these

Q3. Two pipes A and B can fill a tank in 15 hours and 20 hours respectively while a third pipe C can empty the full tank in 25 hours. All the three pipes are opened in the beginning. After 10 hours, C is closed, In how much time, will the tank be full?
(a) 12 hrs
(b) 13 hrs
(c) 16 hrs
(d) 18 hrs
(e) 14 hrs.

Q4. A cistern can be filled by two taps A and B coming from the same main pipeline in 20 and 30 minutes respectively. Both the taps are opened at the same time but due to partial closing of a valve in the main pipeline tap A was supplying only 4/5th of its capacity and tap B, 5/6th of its capacity. After some time, the valve in the main pipeline was opened fully thereby enabling the two taps to supply at full capacity. It took another 5 minutes to fill the cistern completely. What was the time for which the main pipeline was get partially closed?
(a) 7 minutes
(b) 9 minutes
(c) 11 minutes
(d) 13 minutes
(e) 6 minutes

Q5. Two pipes A and B can fill a tank in 20 hours and 25 hours respectively and a third pipe C can empty the tank in 50 hours. All of three pipes opened together and after some times

pipe C is closed. If total time to fill the tank from beginning is 13 hours, find after how much time pipe C was closed?
(a) 11 hrs
(b) 9 hrs
(c) 8.5 hrs
(d) 7.5 hrs
(e)10.5 hrs.

Q6. There are 6 filling pipes each capable of filling a cistern alone in 16 minutes and 4 emptying pipes each capable of emptying a cistern alone in 20 minutes. All pipes are opened together and as a result, tank fills 28 litres of water per minute. Find the capacity of the tank.
(a) 145 l
(b) 160 l
(c) 240 l
(d) 180 l
(e) 154 l

Q7. A pump can be operated both for filling a tank and for emptying it. The capacity of tank is 2400 m^3. The emptying capacity of the pump is 10 m^3 per minute higher than its filling capacity. Consequently, the pump needs 8 minutes less to empty the tank than to fill it. Find the filling capacity of the pump.
(a) 45 m^3/minute
(b) 30 m^3/minute
(c) 50 m^3/minute
(d) 55 m^3/minute
(e) None of these

Q8. Two pipes A and B can separately fill a cistern in 60 minutes and 75 minutes respectively. There is a third pipe in the bottom of the cistern to empty it. If all the three pipes are simultaneously opened, then then the cistern is full in 50 minutes. In how much time the third pipe alone can empty the cistern?
(a) 110 minutes
(b) 100 minutes
(c) 120 minutes
(d) 90 minutes
(e)130 minutes

Q9. There are two vessels A and B. Vessel A contains mixture milk and water in the ratio of 11 : 9, while vessel B contains mixture water and apple Juice in the ratio of 3 : 7. If 44 liter mixture from vessel A and 32 liter mixture from vessel B taken out and mixed together in vessel C, then find the quantity of water in vessel C ?
(a) 29.4 ℓ
(b) 2.94 ℓ
(c) 24.9 ℓ
(d) 26.4 ℓ
(e) 23.4 ℓ

Q10. An alloy contains only zinc and copper. One such alloy weighing 15 gm contains zinc and copper in the ratio of 2 : 3 by weight. If 10 gm of zinc is added then find what amount of copper has to be removed from the alloy such that the final alloy has zinc and copper in the ratio of 4 : 1 by weight?
(a) 5 gm
(b) 5.5 gm
(c) 6 gm
(d) 4.8 gm
(e) 7.5 gm

Directions (11-15): What will come at the place of question mark in the following questions? (You are not expected to find exact value)

Q11. $499.97 \div 4.95 + (5.99)^3 - 207.94 =?$
(a) 100
(b) 108
(c) 122
(d) 186
(e) 160

Q12. $\sqrt{1849} \times 242.97 \div 26.99 - 40.97 =?$
(a) 355
(b) 369
(c) 346
(d) 326
(e) 384

Q13. 59.97% of 849.97 – 38.98% of 599.98 = ?
(a) 276
(b) 225
(c) 256
(d) 295
(e) 246

Q14. $\frac{2}{5}$ of $524.98 \div \sqrt{4901} + \sqrt[4]{625} = ?$
(a) 13
(b) 15
(c) 12
(d) 8
(e) 4

Q15. $\frac{14}{399} \div \frac{7}{15} \div \frac{3}{160} + 171 = ?$
(a) 106
(b) 175
(c) 150
(d) 125
(e) 205

English Medium

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Solutions

S1. Ans.(c)
Sol.
Initial quantity of acid = 2 × 15 = 30 ℓ
Let x litre of second solution is added.
$\therefore \frac{30 + 0.3x}{200 + x} > \frac{20}{100}$ & $\frac{30 + 0.3x}{200 + x} < \frac{25}{100}$
$\Rightarrow \frac{30 + 0.3x}{200 + x} > \frac{1}{5}$ & $\frac{30 + 0.3x}{200 + x} < \frac{1}{4}$
⇒ 200 + x < 150 + 1.5x & 200 + x > 120 + 1.2x
⇒ x > 100 & x < 400
⇒ 100ℓ < x < 400ℓ

S2. Ans.(a)
Sol.

Let initial amount of milk was x kg

$$\therefore \frac{512}{1000} = x\left(1 - \frac{1}{5}\right)^4$$

$$\Rightarrow \frac{512}{1000} = \frac{256x}{625}$$

$$\Rightarrow x = 1.25 \text{ kg}$$

S3. Ans.(a)
Sol.

One hour's work of all the three pipes together

$$= \left(\frac{1}{15} + \frac{1}{20} - \frac{1}{25}\right)$$

$$= \frac{20 + 15 - 12}{300}$$

$$= \frac{23}{300}$$

10 hours' work $= \frac{23}{300} \times 10 = \frac{23}{30}$ work completed

Rest work $\frac{7}{30}$ will be completed by A and B.

∵ (A + B) complete the whole work in $\frac{60}{7}$ hours

∴ $\frac{7}{30}$ work will be completed in $= \frac{60}{7} \times \frac{7}{30} = 2$ hours

∴ Total time to fill the tank = 10 + 2 = 12 hours

S4. Ans.(b)
Sol.

Let partial closing was for x minutes.

$$\therefore \left(\frac{x}{25} + \frac{5}{20}\right) + \left(\frac{x}{36} + \frac{5}{30}\right) = 1$$

$$\Rightarrow \frac{61x}{900} + \frac{25}{60} = 1$$

$$\Rightarrow x = \frac{35 \times 900}{61 \times 60}$$

$$\simeq 9 \text{ minutes}$$

S5. Ans.(c)
Sol.

Let after x hours pipe c was closed
One hour work of all the three
pipes together

$$= \frac{1}{20} + \frac{1}{25} - \frac{1}{50}$$

$$= \frac{7}{100}$$

One hour work of A and B together

$$= \frac{1}{20} + \frac{1}{25} = \frac{9}{100}$$

ATQ,

$$\frac{7x}{100} + \frac{9}{100}(13 - x) = 1$$

$$\Rightarrow -\frac{2x}{100} = 1 - \frac{117}{100}$$

$$\Rightarrow x = 8.5 \text{ hours}$$

S6. Ans.(b)
Sol.
Cistern filled in one min

$$= \frac{6}{16} - \frac{4}{20} = \frac{7}{40}$$

Cistern filled in $= \frac{40}{7}$ min

Cistern capacity $= \frac{40}{7} \times 28 = 160$ litres

S7. Ans.(c)
Sol.

Let filling capacity be x m³/min
So, emptying capacity = $(x + 10)$ m³/min
According to question
$\frac{2400}{x} - \frac{2400}{x+10} = 8$
$\Rightarrow 2400 \left(\frac{x+10-x}{x(x+10)} \right) = 8$
$\Rightarrow x^2 + 10x - 3000 = 0$
$\Rightarrow x = 50$ m³/min

S8. Ans.(b)
Sol.
LCM of 60, 75 and 50 = 300 unit
So, pipe A's unit per day = $\frac{300}{60}$ = 5 unit
Pipe B's unit per day = $\frac{300}{75}$ = 4 unit
(A + B + C)'s unit per day = $\frac{300}{50}$ = 6 unit
So, C's unit work = 6 – (5 + 4) = – 3
So, Time taken by pipe = $\frac{300}{3}$
= 100 minutes

S9. Ans.(a)
Sol.
Quantity of water in mixture taken out
from vessel A = $\frac{9}{20} \times 44 = 19.8\ell$
Quantity of water in mixture taken out
from vessel B = $\frac{3}{10} \times 32 = 9.6\,\ell$
∴ Total quantity of water in vessel C
= 19.8 + 9.6= 29.4 ℓ

S10. Ans.(a)
Sol.
1st alloy zinc = $\frac{2}{5} \times 15 = 6$
Copper = $\frac{3}{5} \times 15 = 9$
Let copper to be removed = x
Then,
$\frac{6 + 10}{9 - x} = \frac{4}{1}$
$\Rightarrow 16 = 36 - 4x$
$\Rightarrow x = 5$ gm

S11. Ans.(b)

Sol.

$$? \simeq \frac{500}{5} + 6^3 - 208$$
$$? \simeq 108$$

S12. Ans.(c)
Sol.

$$? \simeq \frac{43 \times 243}{27} - 41$$
$$\simeq 387 - 41$$
$$\simeq 346$$

S13. Ans.(a)
Sol.

$$? \simeq \frac{60}{100} \times 850 - \frac{39}{100} \times 600$$
$$\simeq 276$$

S14. Ans.(d)
Sol.

$$? \simeq \frac{210}{70} + 5$$
$$\simeq 8$$

S15. Ans.(b)
Sol.

$$? \simeq \frac{14}{400} \times \frac{15}{7} \times \frac{160}{3} + 171$$
$$\simeq 4 + 171$$
$$\simeq 175$$

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