

Quiz Date: 12th May 2020

Q1. A tank is filled in 5 hours by three pipes P, Q and R. The pipe R is twice as fast as Q and Q is twice as fast as P. How much time will pipe P alone take to fill the tank?

- (a) 35 hours
- (b) 25 hours
- (c) 20 hours
- (d) Cannot be determined
- (e) None of these

Q2. A contractor undertook to complete a project in 90 days and employed 60 men on it. After 60 days, he found that $\frac{3}{4}$ of the work has already been completed. How many can he discharge so that the project may be completed exactly on time?

- (a) 40
- (b) 20
- (c) 30
- (d) 15
- (e) None of these

Q3. Arun takes 4 more days than Rana to complete a work. Yash is 20% more efficient than Rana and takes 1 less day than Rana. Find the number of days taken by all of them to complete twice this work together?

- (a) 6 days
- (b) $2\frac{1}{7}$ days
- (c) $4\frac{2}{7}$ days
- (d) $3\frac{1}{3}$ days
- (e) $5\frac{2}{7}$ days

Q4. A can complete a work in 10 days, B can complete the same work in 20 days and C in 40 days. A starts working on the first day, B works for second day and C works for third day and so on. If they continued working in the same way, in how many days will the work be completed?

- (a) 15 days
- (b) 16.5 days
- (c) 15.5 days
- (d) 17 days
- (e) None of these

Q5. One day efficiency of Veer is 20% more than Anurag and that of Shivam is 20% less than Anurag, while Ayush can do a work in half of time as Veer, Anurag & Shivam take to complete the same work together. If first eight days Ayush work alone and after that he left the work and Veer, Anurag & Shivam working together complete the remaining work in 12 days, then

find in what time work will be completed, if Anurag and Ayush work on alternative days, starting with Ayush?

- (a) $41\frac{1}{3}$ days
- (b) $38\frac{1}{3}$ days
- (c) $36\frac{1}{3}$ days
- (d) $44\frac{1}{3}$ days
- (e) $46\frac{1}{3}$ days



Q6. To do a certain work B would take 4 times as long as A and C together and C would take 3 times as long as A and B together. These three men together complete the work in 5 days. How long would take B and C to complete the work ?

- (a) $9\frac{1}{11}$ days
- (b) $11\frac{1}{9}$ days
- (c) $26\frac{2}{3}$ days
- (d) $28\frac{3}{5}$ days
- (e) None of these

Q7. 40 men, working 8 hours a day can do a piece of work in 15 days. Find the number of days in which second group of 60 men working 4 hrs a day can do twice the work. Assume that 3 men of the first group do as much work in 2 hour as 4 men of the second group do in 3 hrs.

- (a) 60 days
- (b) 40 days
- (c) 80 days
- (d) 70 days
- (e) 50 days

Q8. A, B and C together can complete a piece of work in $15\frac{15}{17}$ days and A and B together can complete same piece of work in $22\frac{1}{2}$ days. B is 40% less efficient than A. Find in how many days A alone can complete the same work, if he is working 20% more efficiently?

- (a) 20 days

- (b) 28 days
- (c) 32 days
- (d) 30 days
- (e) 25 days

Q9. Tap A can fill a water tank in 25 minutes, tap B can fill the same tank in 40 minutes and tap C can empty the tank in 30 minutes. If all the three taps are opened together, in how many minutes will the tank be completely filled up or emptied?

- (a) $32\frac{2}{19}$
- (b) $30\frac{10}{19}$
- (c) $33\frac{3}{19}$
- (d) $31\frac{11}{19}$
- (e) None of these

Q10. Pipe A can fill the tank in 4 hour, while pipe B can fill it in 6 hours working separately. Pipe C can empty the whole tank in 4 hours. Ram opened the pipe A and B simultaneously to fill the empty tank. He wanted to adjust his alarm so that he could open the pipe C when it was half-filled, but he mistakenly adjusted his alarm at the time when the tank would be $\frac{3}{4}$ th filled. What is the time difference between both the cases, to fill the tank fully :

- (a) 48 min.
- (b) 54 min.
- (c) 30 min.
- (d) 44 min.
- (e) Can't be determined

Directions (11-15): What value will come in place of the question mark (?) in the following question?

Q11. $3\frac{2}{7} + 4\frac{1}{14} - \frac{9}{14} = \frac{188}{?}$

- (a) 14
- (b) 28
- (c) 35
- (d) 7
- (e) 24

Q12. $\sqrt{15 \times 22^2 - 40\% \text{ of } 60^2 + 19 \times 39} = ?^2$

- (a) 81
- (b) 21
- (c) 19
- (d) 11
- (e) 9

Q13. $40\% \text{ of } ? + 55\% \text{ of } 360 = 36\% \text{ of } 450 + 10^2$

- (a) 64

- (b) 320
 (c) 160
 (d) 80
 (e) 200

$$Q14. \sqrt{144} \times \sqrt{324} \div 4 \left(\frac{1}{3} \div 24 \right) = \frac{(54)^2}{?}$$

- (a) 432
 (b) 0.75
 (c) 243
 (d) $\frac{3}{64}$
 (e) 1.5

$$Q15. 3^4 \div 36^2 \times 24^3 = \frac{?^3}{2}$$

- (a) 16
 (b) 14
 (c) 6
 (d) 18
 (e) 12

Solutions

S1. Ans.(a)

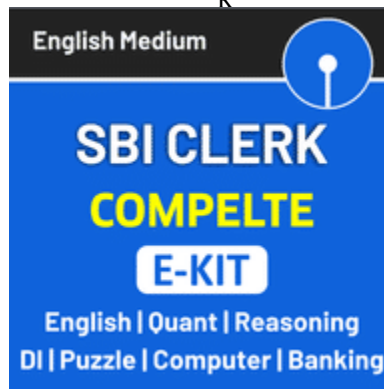
Sol. Here ratio of efficiencies of pipes P, Q and R are as follows:

R	Q	P
2	1	
	2	1
4	: 2	: 1

Suppose the efficiencies of pipes R, Q and P are 4K, 2K and K.

Since, the tank is filled in 5 hours by the three pipes having combined efficiency equal to 7K,

the time required to fill the tank by P alone = $\frac{7K \times 5}{K} = 35$ hours



S2. Ans (b)

Sol. Let Required men = x

$$\frac{60 \times 60}{\frac{3}{4}} = \frac{(60-x) \times 30}{\frac{1}{4}}$$

$$40 = 60 - x$$

$$x = 20$$

S3. Ans.(c)

Sol.

Let Rana takes x days and Arun takes $x + 4$ days

Therefore, Yash takes $x - 1$ days.

Also, if Rana works Y units per day, then Yash works $1.2Y$ units per day.

Therefore, we can note that work done by Rana is x days is same as work done by Yash in $x - 1$ days.

$$xY = 1.2Y(x - 1)$$

$$xY = 1.2xY - 1.2Y$$

$$.2xY = 1.2Y$$

$$x = 6 \text{ days}$$

$$\text{Total work units} = xY = 6Y \text{ units}$$

$$\text{Twice work units} = 12Y \text{ units}$$

Also if we assume efficiency of Arun as m units/day

Then

$$m(6 + 4) = 6Y \quad [\text{Arun takes 4 more days than Rana}]$$

$$m = \frac{3Y}{5} = 0.6Y$$

Total work done by all of them together in a day

$$= Y + 1.2Y + 0.6Y$$

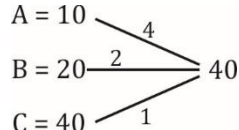
$$= 2.8Y \text{ units}$$

Time taken by them all together to complete the work

$$= \frac{12Y}{2.8Y} = 4 \frac{2}{7} \text{ days}$$

S4. Ans (b)

Sol. Let total work = 40 units (LCM)



Work done in 3 days = $4 + 2 + 1 = 7$ units

Work done in 3×5 (15 days) = $7 \times 5 = 35$ units

Work left = $40 - 35 = 5$ unit

On 16th day, 4 unit of work will be done by A.

Now work left = $5 - 4 = 1$ unit

On 17th day its B turn

1 unit of work done by B in $\frac{1}{2}$ days

Total days = $16 + \frac{1}{2} = 16.5$

S5. Ans(b)

Sol.

Let efficiency of Anurag = 100

So, efficiency of Veer = 120

And efficiency of Shivam = $100 \times \frac{80}{100} = 80$

Efficiency of Ayush = $\frac{100+120+80}{2} = 150$

Ratio of efficiency of Veer, Anurag, Shivam & Ayush = 6 : 5 : 4 : 7.5

Let one day work of Veer, Anurag, Shivam & Ayush be 6w units, 5w units, 4w units & 7.5w units respectively

ATQ –

Total work = $7.5w \times 8 + (5w + 6w + 4w) \times 12$
= 240w units

When Anurag & Ayush work in rotation

First day work done by Ayush = 7.5w units

Second day work done by Anurag = 5w units

Total two days' work = $7.5w + 5w = 12.5w$ units

In 38 days, total work done = $\frac{38}{2} \times 12.5w = 237.5w$ units

Remaining work = $240w - 237.5w = 2.5w$

Remaining work done by Ayush = $\frac{2.5w}{7.5w} = \frac{1}{3}$ days

Total time = $38\frac{1}{3}$ days



S6. Ans.(b)

Sol.

	A + C	B	C	A+B
time	1	4	3	1
efficiency	(4	1) _{x4}	(1	3) _{x5}
	└───┬───┘ 16 5 4		└───┬───┘ 5 4 15	

B = 4

C = 5

A = 11

Required time = $\frac{20 \times 5}{9} = \frac{100}{9} = 11\frac{1}{9}$ days

S7. Ans.(c)

Sol.

Let efficiency of men of first group is M_1 and second group is M_2

$$3M_1 \times 2 = 4M_2 \times 3$$

$$M_1 = 2M_2$$

$$\text{work} = 40M_1 \times 8 \times 15$$

According to question

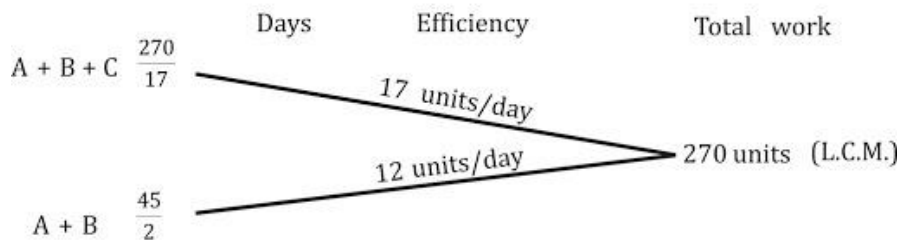
Let d be required days.

$$40M_1 \times 8 \times 15 \times 2 = 60M_2 \times 4 \times d$$

$$d = 80 \text{ days}$$

S8. Ans.(d)

Sol.



Let efficiency of A & B be '5x' units/day and '3x' units/day respectively,

ATQ,

$$5x + 3x = 12$$

$$x = 1.5 \text{ unit}$$

Hence, efficiency of A = 5x
= 7.5 units / day

$$\text{A's increased efficiency} = 7.5 \times \frac{120}{100}$$

$$= 9 \text{ units / day}$$

$$\text{Required days} = \frac{270}{9}$$

$$= 30 \text{ days}$$

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S9. Ans (d)

Sol. Let total capacity of tank be 600 liters (LCM)

So, efficiency of tap A, B and C are 24, 15 and 20 lit/min respectively.

ATQ

$$\therefore \text{Required time} = \frac{600}{24+15-20} = \frac{600}{19} = 31 \frac{11}{19} \text{ min}$$

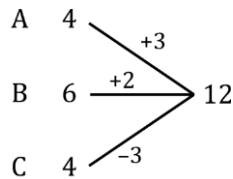
Alternatively,

$$1 \text{ minute work of all 3 pipes} = \frac{1}{25} + \frac{1}{40} - \frac{1}{30} = \frac{19}{600} \text{ units}$$

$$\text{Required time to fill the tank} = \frac{600}{19} \text{ min} = 31 \frac{11}{19} \text{ min}$$

S10. Ans.(b)

Sol.



$$\begin{aligned} \therefore \text{Difference of their time} &= \frac{6}{5} + \frac{6}{2} - \frac{9}{5} - \frac{3}{2} \\ &= \frac{30-21}{10} \text{ hours} \\ &= \frac{9}{10} \text{ hours} \\ &= 54 \text{ mins.} \end{aligned}$$

S11. Ans.(b)

Sol.

$$\begin{aligned} 3\frac{2}{7} + 4\frac{1}{14} - \frac{9}{14} &= \frac{188}{?} \\ \frac{23}{7} + \frac{57}{14} - \frac{9}{14} &= \frac{188}{?} \\ \frac{46+57-9}{14} &= \frac{188}{?} \\ \frac{94}{14} &= \frac{188}{?} \\ ? &= \frac{188}{94} \times 14 = 28 \end{aligned}$$

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S12. Ans.(e)

Sol.

$$\begin{aligned} \sqrt{15 \times 22^2 - 40\% \text{ of } 60^2 + 19 \times 39} &= ?^2 \\ \sqrt{15 \times 484 - 40\% \text{ of } 3600 + 19 \times 39} &= ?^2 \\ \sqrt{7260 - 1440 + 741} &= ?^2 \\ \sqrt{6561} &= ?^2 \\ 81 &= ?^2 \\ ? &= 9 \end{aligned}$$

S13. Ans.(c)

Sol.

$$\begin{aligned} 40\% \text{ of } ? + 55\% \text{ of } 360 &= 36\% \text{ of } 450 + 10^2 \\ \frac{2}{5} \times ? + \frac{11}{20} \times 360 &= \frac{36}{100} \times 450 + 100 \\ \frac{2}{5} \times ? + 198 &= 162 + 100 \\ \frac{2}{5} \times ? &= 262 - 198 \\ \frac{2}{5} \times ? &= 64 \\ ? &= 160 \end{aligned}$$

S14. Ans.(b)

Sol.

$$\sqrt{144} \times \sqrt{324} \div 4 \left(\frac{1}{3} \div 24 \right) = \frac{(54)^2}{?}$$

$$12 \times 18 \div (4 \div 72) = \frac{(54)^2}{?}$$

$$? = \frac{54 \times 54 \times 4}{12 \times 18 \times 72} = \frac{3}{4} = 0.75$$

S15. Ans.(e)

Sol.

$$3^4 \div 36^2 \times 24^3 = \frac{?^3}{2}$$

$$\frac{3^4}{36^2} \times 24^3 \times 2 = ?^3$$

$$?^3 = 1728$$

$$? = 12$$

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