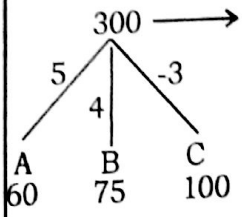
Paramount Concept:-



→ L.C.M. of 60 & 75 is 300. C has to be kept 100 in order to reduce 5 + 4 to 6.. because $\frac{300}{6} = 50$ min. which is the filling time of all the pipes together

To fill the tank in 50min. the inflow of water should be 6 ltr./min. i.e. $\frac{300}{6}$ = 50 min.

It means 3 ltr. water flows out every minute.

12.3; In 1 minute the pipe of 2 cm diameter fills $\frac{1}{61} \times \frac{1}{4}$ of the cistern

In 1 minute the pipe of $1\frac{1}{3}$ cm diameter fill $\frac{1}{61} \times \frac{4}{9}$ of the cistern.

∴ the whole is filled in 36 minutes.

Paramount Concept:-

	D_1	D_2	D_3	
	1	$\frac{4}{3}$	2	
Squaring →	1	$\frac{16}{9}$	4	⇒ 9 : 16 : 36

↓ because capacity ∝ r^2

↓ 61 min. (as largest one can fill it in 61 min. and so 36 × 61 is the capacity of the cistern)

But if all pipes are kept open then time taken

$$= \frac{\text{Capacity}}{\text{total inflow}} = \frac{36 \times 61}{9 + 16 + 36} = 36 \text{ min.}$$

13.2; **Short Trick:-**

$$\text{Required time} = \frac{3.5 \times 4}{4 - 3.5} = 28 \text{ hrs.}$$

13.2; **2nd Method:-**

Cistern is filled by inlet in $3\frac{1}{2}$ hrs.

$= \frac{7}{2}$ hrs.

In 1hr. it filled $\frac{2}{7}$ part

Cistern with leakage can be filled in 4 hrs.

In 1hr. it filled $\frac{1}{4}$ part

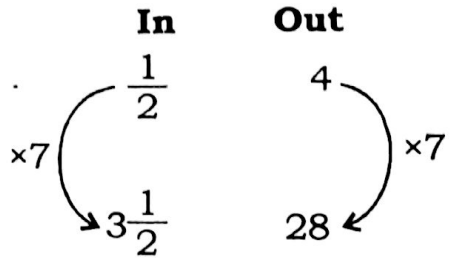
In 1hr. the leakage emptied

$$= \frac{2}{7} - \frac{1}{4} = \frac{8-7}{28} = \frac{1}{28} \text{ part}$$

Leakage will take 28 hrs.

Paramount Concept:-

If the leakage is not repaired, the time taken to fill the Cistern full is $\frac{1}{2}$ hr. extra. This means outlet will drain this water in 4 hrs. Hence



$\frac{1}{2} \times 7 = 3\frac{1}{2}$. Hence 4 will also be multiplied by 7

14.4; Let B be closed after x minutes.

Then, part filled by (A + B) in x min. + part filled by A in $(18 - x)$ min. = 1.

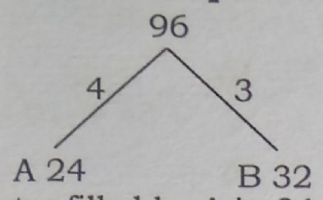
$$\therefore x\left(\frac{1}{24} + \frac{1}{32}\right) + (18 - x) \times \frac{1}{24} = 1$$

or, $\frac{7x}{96} + \frac{18 - x}{24} = 1$ or $7x + 4(18 - x) = 96$

or, $3x = 24$ ∴ $x = 8$.

So, B should be closed after 8 min.

Paramount Concept:-



Water filled by A in 24 min. = 96 l

$\therefore$ Water filled by A in 18 min. $\frac{18 \times 96}{24}$

$= 72\ l$

remaining = 96 - 72 = 24 l

96 l is filled by B in 32 min.

$\therefore$ 24 ltr. filled by B in = $\frac{24}{3}$ = 8 min.

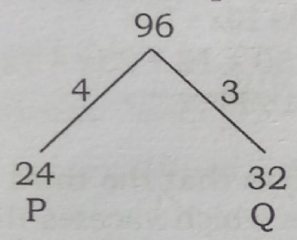
15. 2; Suppose the first pipe was closed after x hrs.

Then, supply for first x hours + second 16 hrs. supply = 1

or, $\frac{x}{24}+\frac{16}{32}=1$ $\quad \therefore \frac{x}{24}=1-\frac{1}{2}=\frac{1}{2}$

$\therefore$ x = 12 hrs.

Paramount Concept:-



Q in 32 hrs. = 96 l

Q in 16 hrs. = 48 ltr.

96 l is filled by P in 24 min.

$\therefore$ 48 ltr. (Remaining) by P = 12 hrs.

16.1; Let the faster pipe fills the tank in x hrs.

Then the slower pipe fills the tank in x + 10 hrs.

In 12 hrs. it is filled completed

Hence, In 1hr. it is filled $\frac{1}{12}$ part

$$\frac{1}{x}+\frac{1}{x+10}=\frac{1}{12}$$

When both of then are opened, the reservoir will be filled in

$$\frac{x(x+10)}{x+(x+10)}=12$$

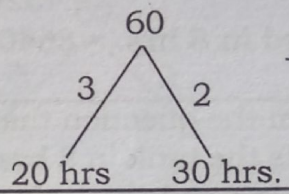
or, $x^2 - 14x - 120 = 0$

$\therefore$ $x = 20, -6$

But x can't be -ve, hence the faster pipe will fill the reservoir in 20 hrs.

Paramount Concept:-

Apply the option. If 1st is taken then it means 20 hrs. & 30 hrs. (as faster is 10 hrs. faster than other)12 hrs. is the time taken which is the actual time taken. Hence option is 1 correct



$\frac{60}{5}$ =12 hrs. is our answer

17.2; A + B + C can fill in 1 hr

$= \frac{1}{6}$ of cistern.

A + B + C can fill in 2 hrs

$= \frac{2}{6}=\frac{1}{3}$ of cistern.

Unfilled part = $\left(1-\frac{1}{3}=\right)$ i.e. $\frac{2}{3}$ is filled in A + B in 8 hrs.

$\therefore$ (A + B) can fill the cistern in $\frac{8 \times 3}{2}$

= 12 hrs.

$\therefore$ C i.e. (A + B + C) – (A + B) can fill in 1hr. $=\frac{1}{6}-\frac{1}{12}=\frac{1}{12}$ part

$\therefore$ Full cistern in 12 hrs.

Paramount Concept:-

Work left = A +B + C = 4 hrs. work

But A + B do it in 8 hrs.

means A + B = C

A + B + C = 6 hrs.

2C = 6 hrs.

C = 12 hrs.

18.3; The filler tap can fill the tank in $= \frac{12 \times 8}{12 - 8}$

$= 24$ hrs.

$\therefore$ Capacity of tank $= 24 \times 60 \times 6$

$= 8640$ litres.

Paramount Concept:-

Water leaked in 4 hrs. = Filled in 12 hrs.

↓

$= 12 \times 60 \times 6$ (6 l flows in 1min. hence in 12 hrs. inflow is $12 \times 60 \times 6\ l$)

$= 4320$ ltr.

$\therefore$ Water leaked in 8 hrs. = 8640 ltr. (double)

19.1; It is clear from the question that the filling pipe fills the tank in 8 hrs and if both the filling and the leak pipes work together, the tank is filled in 10 hrs. Therefore, the leak will empty the tank in $\frac{8 \times 10}{10 - 8} = 40$ hrs.

Short cut Method:-

10 hrs. outflow = 2 hrs. inflow

↓ × 4 ↓ ×4

40 hrs. 8 hrs. (2 × 4 = 8 hrs.

Which is filling time

Hence 10 is also multiplied by 4)

20.2; Cistern filled in 5 minutes

$= 5\left(\frac{1}{12} + \frac{1}{15}\right) = \frac{3}{4}$

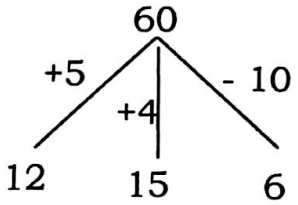
Net work done by 3 pipes in 1 minute

$= \left(\frac{1}{12} + \frac{1}{15}\right) - \frac{1}{6} = -\frac{1}{60}$

–ve sign shows that $\frac{1}{60}$ part is emptied in 1 minutes

$\therefore \frac{3}{4}$ part is emptied in $60 \times \frac{3}{4} = 45$ min.

Paramount Concept:-



+ 5+ 4 -10 = -1

Cistern can be emptied in $\frac{60}{1}$

= 60 min.

Water filled in 5min. by pipes I & II

$= (5 + 4) \times 5 = 45$ ltr.

When the three pipes are left open 1l will be emptied per min. Hence

$\therefore$ Time to empty 45 $l = \frac{45}{1} = 45$ min.

21. 3; We have to find the nature of the third tap — whether it is a filler or a waste pipe.

Let it be a filer pipe which fills in x hrs.

The, $\frac{10 \times 15 \times x}{10 \times 15 + 10x + 15x} = 12$

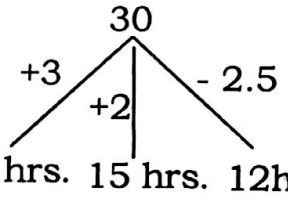
or, $150x = 150 \times 12 + 25x \times 12$

or, $-150x = 1800$

$\therefore x = -12$

–ve sign shows that the third pipe is a waste pipe which vacates the tank in 12 hrs.

Paramount Concept:-



According to the question

$\frac{30}{3 + 2 - x} = 12$ hrs.

$\therefore x = 2.5$

To fill the tank in 12 hour, inflow should be 2.5 ltr.

$\therefore$ rest 2.5 litres should flow out.

22.5; A + B fill in 6 hrs.
B + C fill in 10 hrs.

A + C fill in $7\frac{1}{2} = \frac{15}{2}$ hrs

$\therefore$ 2(A + B + C) fill in $\dfrac{6 \times 10 \times \frac{15}{2}}{6 \times 10 + 6 \times \frac{15}{2} + 10 \times \frac{15}{2}}$

$= \dfrac{6 \times 5 \times 15}{180} = \dfrac{5}{2}$ hrs

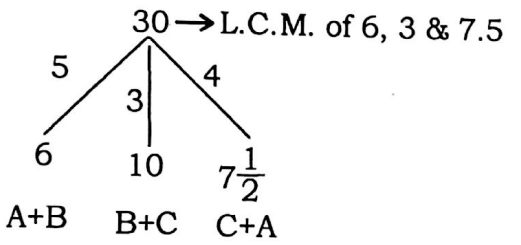
$\therefore$ A + B + C fill the tank in 5 hrs.
Now, A [=(A + B + C) – (B + C)] fill in

$\dfrac{10 \times 5}{10 - 5} = 10$ hrs

Similarly, B fill in $\dfrac{\frac{15}{2} \times 5}{\frac{15}{2} - 5} = 15$ hrs

and C fills in $\dfrac{5 \times 6}{6 - 5} = 30$ hrs

Paramount Concept:-



2 (A + B + C) = 12 units/hr.
A +B + C = 6 units/hr.
C = 1 unit/hr. ($\because$ A+ B = 5)
A = 3 ($\because$ B + C = 3)
B = 2 ($\because$ C + A = 4)
10 hrs. , 15 hrs. , 30 hrs.

23.3; Time taken by the two pipes to fill the tank

$= \dfrac{20 \times 30}{20 + 30}$ hrs = 12 hrs.

$\therefore$ $\frac{1}{3}$ of tank if filled in $\frac{12}{3} = 4$ hrs.

Now, $\frac{1}{3}$ of the supplied water leaks out

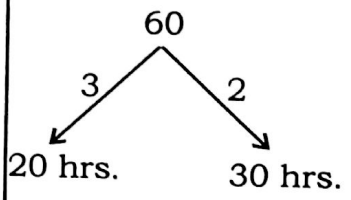
$\Rightarrow$ the filler pipes are only $1 - \frac{1}{3} = \frac{2}{3}$ as efficient as earlier.

$\Rightarrow$ the work of (12 – 4 =) 8 hrs will be completed now in

$8 \div \frac{2}{3} = \frac{8 \times 3}{2} = 12$ hrs

$\therefore$ total time = 4 + 12 = 16 hrs.

Paramount Concept:-



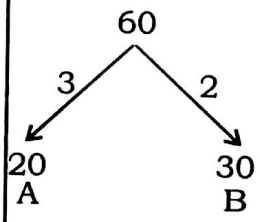
$\frac{60}{3+2} = \frac{60}{5} = 12$ hrs.

to fill $\frac{1}{3}$rd part $\frac{12}{3} = 4$ hrs. is taken
12 + 4 = 16 hrs.

$\frac{1}{3}$rd of (3 + 2) flows out. $\frac{5}{3}$ flows out

$\therefore$ $5 - \frac{5}{3} = \frac{10}{3}$ is the inflow. Hence 40*l* will take = $\frac{40}{10/3} = 12$ hrs. Total time = 16 hrs.

24.2; **Paramount Concept:-**



($\frac{60}{5} = 12$ min. will be taken by A & B)

By B it is filled in 18 min. = 36 ltr. (as 2 l is filled in 1 min.)
Remaining 60 - 36 = 24 ltr. is filled by A in 8 min. (as $\frac{24}{3} = 8$)

25. 4; (A + B) in 36 minutes can fill 1 part of the tank

(A + B) in 1 minute can fill $\frac{1}{36}$ part of the tank

(A + B) in 30 minutes can fill

$\frac{1}{36} \times 30$ part of the tank $= \frac{5}{6}$

Then only A pipe was opened.

Remaining part of the tank to be filled

$= \left(1 - \frac{5}{6}\right)$ part $= \frac{1}{6}$ part

$\therefore$ By pipe A, $\frac{1}{6}$ part of the tank can be filled in 10 min.

By pipe A, 1 part of the tank can be filled in 10 × 6 minutes= 60 minutes

Pipe A in 1 min can fill $\frac{1}{60}$ part of the tank

Pipe A + B in 1 minute can fill $\frac{1}{36}$ part of the tank

$\therefore$ Pipe B in 1 minute $= \left(\frac{1}{36} - \frac{1}{60}\right)$

$= \frac{5-3}{180} = \frac{1}{90}$

$\therefore$ The whole tank can be filled by Pipe B in 90 min.

Paramount Concept:-

If B was closed after 30 min. then A took 40 min. i.e. 4 min. more then 36.

This means B's 6 min. work = A's 4 min. work

6 : 4

↓ : ↓

3 : 2

5 × 36

3 → A, 2 → B

$\therefore$ B $= \frac{180}{2} = 90$ min.

26.2; A + B together fill the tank in

$= \frac{10 \times 15}{10 + 15} = 6$ hrs.

Paramount Concept:-

30

3 → 10, 2 → 15

$\frac{30}{5} = 6$ hrs.

27.1; $\frac{8 \times 16}{16 - 8} = 16$ hrs.

Paramount Concept:-

16

+2 → 8, -1 → 16

$= \frac{16}{+2-1} = \frac{16}{1} = 16$ hours.

28. 1; $\frac{xy}{y-x}$ hrs.

29.2; A + B + C will fill the tank in

$\frac{4 \times 6 \times 8}{6 \times 8 + 4 \times 8 - 4 \times 6} = \frac{4 \times 6 \times 8}{56}$

$= \frac{24}{7} = 3\frac{3}{7}$ hrs.

Paramount Concept:-

24

+6 → 4 hrs., +4 → 6 hrs., - 3 → 8 hrs.

$= \frac{24}{6+4-3} \Rightarrow \frac{24}{7} = 3\frac{3}{7}$ hrs.

30. 3; A + B + C fill the tank in

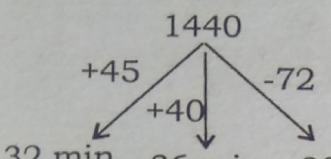
$\frac{32 \times 36 \times 20}{36 \times 20 + 32 \times 20 - 32 \times 36} = \frac{32 \times 36 \times 20}{208}$

$= \frac{1440}{13}$ hrs.

$\therefore$ A + B + C fill half the tank in $\frac{720}{13}$ hrs.

$= 55\frac{5}{13}$ hrs.

Paramount Concept:-



$$\frac{1440}{45+40-72} = \frac{1440}{13} \text{ min. to fill tank full}$$

$$\text{To fill it half} = \frac{1440}{13\times 2} = \frac{720}{13} = 55\frac{5}{13} \text{ min.}$$

31.2; Let the faster tap fill the tank in x hrs.

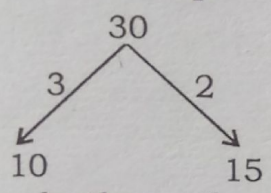
$\therefore$ slower tap fills it in $(x + 5)$ hrs.

Now, both taps fill the tank in

$$\frac{x(x+5)}{x+x+5} = 6 \text{ hrs.}$$

So, $x = 10$ hrs.

Paramount Concept:-



$$\Rightarrow \frac{30}{5} = 6 \text{ hrs}$$

Apply the options. If we take 1st option, it will form fraction. Second option, will give us the exact answer.

32.5; A + B + C can fill a cistern in 6 hrs....(1)

$\therefore$ A + B + C can fill $\frac{1}{3}$ of cistern in 2 hrs.

Now, $1-\frac{1}{3}=\frac{2}{3}$ of cistern in filled up by A + B in 7 hrs.

$\therefore$ A + B can fill up the whole cistern in

$$\frac{7\times 3}{2} = \frac{21}{2} \text{ hrs} \quad ...(ii)$$

From (1) and (2), C can fill the cistern in =

$$\frac{6\times\frac{21}{2}}{\frac{21}{2}-6} = \frac{6\times 21}{9} = 14 \text{ hrs.}$$

Paramount Concept:-

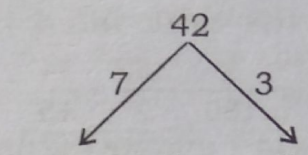
After 2 hrs. of work A + B + C's 4 hrs. work

remains but A +B takes 7hrs. to complete it. This

means C's 4 hours work = A +B's = 3 hrs. work

C : A+ B

3 : 4 → time



33.4; In one min. $= \frac{1}{18} = \frac{1}{10} + \frac{1}{15} - \frac{1}{C}$

$$= \frac{1}{18} = \frac{3+2}{30} - \frac{1}{C}$$

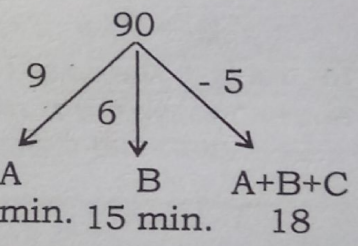
$$= \frac{1}{18} = \frac{5}{30} - \frac{1}{C}$$

$$= \frac{1}{18} = \frac{1}{6} - \frac{1}{C}$$

$$\frac{1}{C} = \frac{1}{6} - \frac{1}{18}$$

$$\frac{1}{C} = \frac{3-1}{18} = \frac{2}{18} = 9 \text{ min.}$$

Paramount Concept:-



$$\frac{90}{9+6-x} = 18, \; x = 10$$

$$\therefore C = -10 \Rightarrow \frac{90}{10} = 9 \text{ min.}$$

344. Part of the tank filled in 1 min by

1st pipe = $\frac{1}{45}$ part

part of the tank emptied in 1 min by

2nd pipe = $\frac{1}{60}$ part

Part of the tank filled in 2 minutes

$= \frac{1}{45} - \frac{1}{60} = \frac{1}{180}$

Part of the tank filled in 352 minutes = $\frac{1}{180} \times \frac{352}{2} = \frac{44}{45}$

After this in 1 minute the first pipe will fill = $\frac{1}{45}$ part

Hence 353 minutes i.e. in 5 hours 53 minutes the tank will be filled

Paramount Concept:-

In 2 min → + 4 filled &
− 3 emptied
i.e. 1 *l* filled
1 *l* → 2 min
176 *l* → 176 × 2 i.e. 352 min
Remaining 4 *l* will be filled in 1 min
i.e. 352 + 1 = 353 min = 5 hrs. 53 min

4 TRAIN

CHAPTER

(i) When a train crosses a man/pole / tree, etc. then it covers a distance equal to length of the train ($D = L_{train}$)

(ii) Whereas, when a train crosses a bridge /platform, etc. it covers a distance equal to length of the train + length of the bridge /platform.

(iii) Distance = Speed × time

(iv) $\text{Speed} = \dfrac{\text{Distance}}{\text{Time}}$

(v) $\text{Time} = \dfrac{\text{Distance}}{\text{Speed}}$

(vi) km/ hr. $\xrightarrow{\times \frac{5}{18}}$ m./s. (To change km./hr. into m./s. multiply it by $\frac{5}{18}$)

(vii) m/s $\xrightarrow{\times \frac{18}{5}}$ km/hr. (To change m./sec. into km./hr. multiply it by $\frac{18}{5}$)

(viii) $\text{Speed} \propto \dfrac{1}{\text{Time}}$

(ix) $\frac{5}{18}$ has come from $\frac{1000}{60 \times 60}$ as 1km. =1000m. & 1hr. = 60 × 60 sec.

Conclusion:-

If the ratio of speed of two objects A & B is (a:b) then the time taken by them to cover the same distance is in the ratio. (b : a)

	A		B
Speed	a	:	b
Time	b	:	a

Rule- 1

Concept of Relative Speed:-

A → x km/hr.

B → y km/hr.

Rel. Speed = $(x - y)$ km/hr.

When two objects move in same direction

Rule- 2

A → x km/hr.

y km/hr. ← B

Rel. Speed = $(x + y)$ km/hr.

When two objects move in opposite direction

1. A train moving with the speed of 180 km/hr. Its speed (in metres per second) is
(1) 5 (2) 40
(3) 30 (4) 50
(5) None of these

2. A train passed two bridges of lengths 800 m and 400 m in 100 seconds and 60 seconds respectively. The length of the train is
(1) 80 m (2) 90 m
(3) 200 m (4) 150 m
(5) None of these

3. A train running at $\frac{7}{11}$ of its normal speed reached a place in 22 hours. How much time could be saved if the train had run at its normal speed?
(1) 14 hours (2) 7 hours
(3) 8 hours (4) 16 hours
(5) None of these

4. A train, 150 m long, takes 30 seconds to cross a bridge 500 m long. How much time will the train take to cross a platform 370 m long?
(1) 36 secs (2) 30 secs
(3) 24 secs (4) 18 secs
(5) None of these

5. If a train, with a speed of 60 km/hr, crossed a pole in 30 second, the length of the train (in metres) is
(1) 1000 (2) 900
(3) 750 (4) 500
(5) None of these

6. A 120 metre long train is running at a speed of 90 km per hour. It will cross a railway platform 230 m long in
(1) 4 seconds (2) 9 seconds
(3) 7 seconds (4) 14 seconds
(5) None of these

7. Two trains are moving in the same direction at 50 km/hr and 30 km/hr. The faster train crossed a man who is sitting in the slower train in 18 seconds. Find the length of the faster train.
(1) 80 m (2) 90 m
(3) 100 m
(4) Can't be determined
(5) None of these

8. A train running at 25 km/hr takes 18 seconds to pass a platform. Next, it takes 12 seconds to pass a man walking at 5 km/hr in the opposite direction. Find the sum of the length of the train and that of the platform.
(1) 125 m (2) 135 m
(3) 145 m (4) 155 m
(5) None of these

9. Two trains start at the same time from Hyderabad and Delhi and proceed toward each other at the rate of 80 km/hr and 95 km per hour respectively. When they meet, it is found that one train has travelled 180 km more than the other. Find the distance between Delhi and Hyderabad.
(1) 1800 km (2) 2000 km
(3) 2100 km (4) 2300 km
(5) None of these

10. Two trains for Delhi leave Jaipur at 8.30 a.m. and 9.00 a.m and travel at 60 and 75 km/hr respectively. How many km. away from Jaipur will the two trains meet if they meet at 1pm.?
(1) 125 km (2) 150 km
(3) 175 km (4) 200 km
(5) None of these

11. Without stoppage a train travels at an average speed of 75 km per hour and with stoppages it covers the same distance at an average speed of 60 km/hr. How many minutes per hour does the train stop?
(1) 10 minutes (2) 12 minutes
(3) 13 minutes (4) 14 minutes
(5) None of these

12. A train passed by a man standing on the platform in 7 seconds and passed by the platform completely in 28 seconds. If the length of the platform is 330 metres, what is the length of the train?
(1) 110 m (2) 120 m
(3) 125 m (4) 130 m
(5) None of these

13. Two stations A and B are 110 km apart on a straight line. One train starts from A at 8 a.m. and travels towards B at 40 km per hour. Another train starts from B at 10 a.m. and travels towards A at 50 km per hour. At what time will they meet?
(1) 8.30 a.m. (2) 8.30 p.m.
(3) 10.20 a.m (4) 10.20 p.m
(5) None of these

14. Two trains of length 100 m and 80 m respectively run on parallel lines of rails. When running in the same direction the faster train passed the slower one in 18 second, but when they are running in opposite directions with the same speed as earlier, they pass each other in 9 seconds. Find the speed of each train.
(1) 5 m/s, 15 m/s
(2) 10 m/s, 25 m/s
(3) 15 m/s, 20 m/s
(4) Can't be determined
(5) None of these

15. A train passed two persons who are walking in the opposite direction in which the train is moving, at the rate of 5 m/s and 10 m/s in 6 second and 5 seconds respectively. Find the length of the train.
(1) 125 m (2) 150 m
(3) 160 m (4) 170 m
(5) None of these

16. A goods train and a passenger train are running on parallel tracks in the same direction. The driver of the goods train observes that the passenger train coming from behind overtakes and crossed his train completely in 60 seconds. Whereas a passenger on the passenger train marks that he crossed the goods train in 40 seconds. If the speed of the trains be in the ratio of 1 : 2, find the ratio of their lengths.
(1) 1 : 2 (2) 2 : 1
(3) 3 : 2 (4) 2 : 3
(5) None of these

17. A train after travelling 50 km meets with an accident and then proceeds at $\frac{3}{4}$ of its former speed and arrives at its destination 35 minutes late. Had the accident occurred 24 km further, it would have reached the destination only 15 minutes late. The normal speed of the train is
(1) 36 km/hr. (2) 38 km/hr.
(3) 46 km/hr. (4) 24 km/hr.
(5) None of these

18. A train covers a distance between stations A and B in 45 minutes. If the speed is reduced by 5 km/hr, it will cover the same distance in 48 minutes. What is the distance between the two stations A and B (in km)? Also, find the speed of the train.
(1) 60 km, 80 km/hr.
(2) 65 km, 70 km/hr.
(3) 60 km, 70 km/hr.
(4) Can't be determined
(5) None of these

19. Two places P and Q are 162 km apart. A train leaves P for Q and at the same time another train leaves Q for P. Both the trains meet 6 hrs after they start moving. If the train travelling from P to Q travels 8 km/hr faster than the other train, find the speed of the two trains.
(1) 17.5 km/hr, 9.5 km/hr
(2) 19.5 km/hr, 11.5 km/hr
(3) 21.5 km/hr, 13.5 km/hr
(4) Can't be determined
(5) None of these

20. The speeds of two trains are in the ratio 3 : 4. They are going in opposite directions along parallel tracks. If each takes 3 seconds to cross a telegraph post, find the time taken by the trains to cross each other completely?
(1) 1 seconds (2) 3 seconds
(3) 5 seconds (4) 7 seconds
(5) None of these

21. The speed of two trains are in the ratio $x : y$. They are moving in the opposite directions on parallel tracks. The first train crossed a telegraph pole in 'a' seconds where as the second train crossed the same telegraph pole in 'b' second. Find the time taken by the trains to cross each other completely.
(1) 1.5 seconds (2) 2 seconds
(3) $\frac{xa + yb}{x + y}$
(4) Can't be determined
(5) None of these

22. The speeds of two trains are in the ratio of 7 : 9. They are moving in the opposite directions on parallel tracks. The first train crossed a telegraph pole in 4 seconds whereas the second train crossed the same pole in 6 seconds. Find the time taken by the trains to cross each other completely.
(1) $2\frac{1}{6}$ seconds (2) $3\frac{1}{6}$ seconds
(3) $4\frac{2}{8}$ seconds (4) $5\frac{1}{8}$ seconds
(5) None of these

23. A train 150 m long passed a pole in 15 seconds and another train of the same length travelling in the opposite direction crosses each other in 12 seconds. The speed of the second train is
(1) 45 km/hr (2) 48 km/hr
(3) 52 km/hr (4) 54 km/hr
(5) None of these

24. A train travelling at 48 km/hr crosses another train, having half its length and travelling in opposite direction at 42 km/hr in 12 seconds. It also passed a railway platform in 45 seconds. The length of the rail platform is
(1) 200 m (2) 300 m
(3) 350 m (4) 400 m
(5) None of these

25. Two trains travel in the same direction at the speeds of 56 km/hr and 29 km/hr respectively. The faster train passed a man in the slower train in 10 seconds. The length of the faster train (in metres) is
(1) 100 (2) 80
(3) 75 (4) 120
(5) None of these

26. A train starts from A at 7 a.m. towards B with speed 50 km/hr. Another train from B starts at 8 a.m. with speed 60 km/hr towards A. Both of them meet at 10 a.m. at C. The ratio of the distance AC to BC is
(1) 5 : 6 (2) 5 : 4
(3) 6 : 5 (4) 4 : 5
(5) None of these

27. A train is travelling at a rate of 45 km/hr. How many seconds, it will take to cover a distance of 4/5 km?
(1) 36 (2) 64
(3) 90 (4) 120
(5) None of these

28. A train 100 m long is running at a speed of 30 km/hr. The time (in second) in which it will pass a man standing near the railway line is
(1) 10 (2) 11
(3) 12 (4) 15
(5) None of these

29. A train running at the speed of 72 kmph crosses a 260 metres long platform in 23 seconds. What is the length of the train in metres?
(1) 200 (2) 240
(3) 220 (4) 160
(5) None of these

30. A 275 metre long train crosses a platform of equal length in 33 seconds. What is the speed of the train in kmph?
(1) 66 (2) 60
(3) 64 (4) 72
(5) None of these

. A 160 metre long train running at a speed of 90 kmph crosses a platform in 18 seconds. What is the length of the platform in metres?
(1) 210 (2) 240
(3) 290 (4) 310
(5) None of these

. A 240 metre long train crosses a 300 metre long platform in 27 seconds. What is the speed of the train in kmph?
(1) 66 (2) 60
(3) 76 (4) 64
(5) None of these

3. A train running at a speed of 60 kmph crosses a platform double its length in 32.4 seconds. What is the length of the platform?
(1) 180 metres (2) 240 metres
(3) 360 metres (4) 90 metres
(5) Cannot be determined

34. A train running at the speed of 66 kmph crosses a signal pole in 18 seconds. What is the length of the train?
(1) 330 metres (2) 300 metres
(3) 360 metres (4) 320 metres
(5) None of these

35. A train 75 metres long overtook a person who was walking at the rate of 6 km an hour, and passed him in $7\frac{1}{2}$ seconds. Subsequently it overtook a second person, and passed him in $6\frac{3}{4}$ seconds. At what rate was the second person travelling?
(1) 1 km/hr (2) 2 km/hr
(3) 3 km/hr (4) 4 km/hr
(5) None of these

36. Two trains measuring 100 and 80 m respectively, run on parallel lines of rails. When travelling in opposite directions they are observed to pass each other in 9 second, but when they are running in the same direction at the same rates as before, the faster train passed the other in 18 seconds. Find the speed of the two trains in km per hour.
(1) 12 km/hr,5 km/hr
(2) 14 km/hr,18 km/hr
(3) 16 km/hr,54 km/hr
(4) 18 km/hr,54 km/hr
(5) None of these

37. A train takes 5 seconds to pass an electric pole. If the length of the train is 120 metres, the time taken by it to cross a railway platform 180 metres long is (in seconds)-
(1) 10.5 seconds (2) 12.5 seconds
(3) 14.5 seconds
(4) Can't be determined
(5) None of these

38. Two trains running in the same direction at 40 kmph and 22 kmph completely pass one another in 1 minute. If the length of the first train is 125 metres, the length of the second train is
(1) 125 m (2) 150 m
(3) 175 m
(4) Can't be determined
(5) None of these

39. A train 100 metres long moving at a speed of 50 kmph crossed a train 120 metres long coming from opposite direction in 6 seconds. The speed of the second train is
(1) 82 km/hr (2) 84 km/hr
(3) 86 km/hr
(4) Can't be determined
(5) None of these

40. Two stations A and B are 110 km apart on a straight line. One train starts from A at 7 a.m. and travels towards B at 20 km/hour speed. Another train starts from B at 8 a.m. and travels towards A at a speed of 25 km per hour. At what time will they meet?
(1) 10 a.m. (2) 11 a.m.
(3) 10 p.m. (4) 11. p.m.
(5) None of these