PIPE AND CISTERN

Pipes and Cistern – Topic and Concept

INLET: An inlet is a pipe which is connected to the tank and with the help of this pipe, the tank is filled.
OUTLET/LEAK: An outlet is a pipe which is connected to the tank. This pipe drains out water from the tank and the tank gets emptied if this pipe is opened.

Formulae

If a pipe can fill a tank in a hrs, then the part filled in 1 hr =1/a.

If a pipe can empty a tank in b hrs, then the part of the full tank emptied in 1 hr = 1/b.

If a pipe can fill a tank in a hrs and the another pipe can empty the full tank in b hrs, then the net part filled in 1 hr, when both the pipes are opened =[1/a - 1/b] ∴ Time taken to fill the tank, when both the pipes are opened = ab/(b - a)

If a pipe can fill a tank in a hrs and another can fill the same tank in b hrs, then the net part filled in 1 hr, when both pipes are opened = [1/a + 1/b] ∴ Time taken to fill the tank = ab/(a + b)

PIPES AND CISTERN

Q 1. A pipe can fill a cistern in 25 hours. Find the part of tank filled in 5 hours.

(1) 1/25 (2) 1/5 (3) 1/10 (4) Data inadequate (5) None of these

PIPES AND CISTERN

Q 1. A pipe can fill a cistern in 25 hours. Find the part of tank filled in 5 hours.

(1) 1/25 (2) 1/5 (3) 1/10 (4) Data inadequate (5) None of these

PIPES AND CISTERN

Q 2. A pipe can empty a cistern in 27 hours. Find the time in which 2/3 part of the cistern will be emptied.

(1) 9 hours (2) 12 hours (3) 15 hours (4) 18 hours (5) None of these

PIPES AND CISTERN

Q 2. A pipe can empty a cistern in 27 hours. Find the time in which 2/3 part of the cistern will be emptied.

(1) 9 hours (2) 12 hours (3) 15 hours (4) 18 hours (5) None of these

PIPES AND CISTERN

Q 3. A tap can fill a cistern in 8 hours and another can empty it in 16 hours. If both the taps are opened simultaneously, the time (in hours) to fill the tank is:
(1) 8 (2) 10 (3) 16 (4) 24 (5) None of these

PIPES AND CISTERN

Q 3. A tap can fill a cistern in 8 hours and another can empty it in 16 hours. If both the taps are opened simultaneously, the time (in hours) to fill the tank is:
(1) 8 (2) 10 (3) 16 (4) 24 (5) None of these

PIPES AND CISTERN

Q 4. A pipe can empty a tank in 15 hrs and another pipe can empty it in 10 hours. If both the pipes are opened simultaneously, find the time in which a full tank is emptied.

(1) 8 hrs (2) 6 hrs (3) 4 hrs (4) 5 hrs (5) None of these

PIPES AND CISTERN

Q 4. A pipe can empty a tank in 15 hrs and another pipe can empty it in 10 hours. If both the pipes are opened simultaneously, find the time in which a full tank is emptied.

(1) 8 hrs (2) 6 hrs (3) 4 hrs (4) 5 hrs (5) None of these

PIPES AND CISTERN

Q 5. Two pipes A and B can fill a tank in 30 minutes and 15 minutes respectively. If both the pipes are opened simultaneously, how much time will be taken to fill the tank?

(1) 10 minutes (2) 12 minutes (3) 8 minutes (4) 9 minutes

(5) None of these

PIPES AND CISTERN

Q 5. Two pipes A and B can fill a tank in 30 minutes and 15 minutes respectively. If both the pipes are opened simultaneously, how much time will be taken to fill the tank?

(1) 10 minutes (2) 12 minutes (3) 8 minutes (4) 9 minutes

(5) None of these

PIPES AND CISTERN

Q 6. There is a leak in the bottom of a cistern. When the cistern is thoroughly repaired, it would be filled in 12 minutes. It now takes 18 minutes longer. If the cistern is full, how long would the leak take to empty the cistern?

(1) 20 minutes (2) 24 minutes (3) 26 minutes (4) 30 minutes

(5) None of these

PIPES AND CISTERN

Q 6. There is a leak in the bottom of a cistern. When the cistern is thoroughly repaired, it would be filled in 12 minutes. It now takes 18 minutes longer. If the cistern is full, how long would the leak take to empty the cistern?

(1) 20 minutes (2) 24 minutes (3) 26 minutes (4) 30 minutes

(5) None of these

PIPES AND CISTERN

Q 7. 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?

(1) 3(2/13) (2) 15(5/13) (3) 8(2/13) (4) 31(11/19) (5) None of these

PIPES AND CISTERN

Q 7. 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?

(1) 3(2/13) (2) 15(5/13) (3) 8(2/13) (4) 31(11/19) (5) None of these

PIPES AND CISTERN

Q 8. In what time would a cistern be filled by three pipes whose diameters are 1 cm, 3 cm, 4 cm, running together, when the largest alone fill it in 26 minutes, the amount of water flowing in by each pipe being proportional to the square of its diameter?

(1) 20 minutes (2) 24 minutes (3) 16 minutes (4) 12 minutes

(5) None of these

PIPES AND CISTERN

Q 8. In what time would a cistern be filled by three pipes whose diameters are 1 cm, 3 cm, 4 cm, running together, when the largest alone fill it in 26 minutes, the amount of water flowing in by each pipe being proportional to the square of its diameter?

(1) 20 minutes **(2) 24 minutes** **(3) 16 minutes** **(4) 12 minutes**

(5) None of these

PIPES AND CISTERN

Q 9. Two pipes A and B can fill a tank in 36 minutes and 48 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 27 minutes?

(1) 10 min (2) 12 min (3) 14 min (4) 16 min (5) None of these

PIPES AND CISTERN

Q 9. Two pipes A and B can fill a tank in 36 minutes and 48 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 27 minutes?

(1) 10 min (2) 12 min (3) 14 min (4) 16 min (5) None of these

PIPES AND CISTERN

Q 10. Three pipes A, B and C can fill a cistern in 36 minutes. After working together for 12 minutes, C is closed and A and B fill the cistern in 48 minutes. Then find the time in which the cistern can be filled by pipe C.

(1) 72 minutes (2) 60 minutes (3) 48 minutes (4) 64 minutes

(5) None of these

PIPES AND CISTERN

Q 10. Three pipes A, B and C can fill a cistern in 36 minutes. After working together for 12 minutes, C is closed and A and B fill the cistern in 48 minutes. Then find the time in which the cistern can be filled by pipe C.

(1) 72 minutes (2) 60 minutes (3) 48 minutes (4) 64 minutes

(5) None of these

PIPES AND CISTERN

Q 11. Three pipes A, B and C are connected to a tank. A and B together can fill the tank in 60 minutes, B and C together in 40 minutes and C and A together in 30 minutes. In how much time will each pipe fill the tank separately?

(1) 80 min, 240 min, 48 min

(2) (2) 40 min, 120 min, 24 min

(3) (3) 60 min, 250 min, 64 min

(4) (4) 65 min, 240 min, 64 min

(5) (5) None of these

PIPES AND CISTERN

Q 11. Three pipes A, B and C are connected to a tank. A and B together can fill the tank in 60 minutes, B and C together in 40 minutes and C and A together in 30 minutes. In how much time will each pipe fill the tank separately?

(1) 80 min, 240 min, 48 min

(2) (2) 40 min, 120 min, 24 min

(3) (3) 60 min, 250 min, 64 min

(4) (4) 65 min, 240 min, 64 min

(5) (5) None of these

PIPES AND CISTERN

Q 12. Two pipes can separately fill a tank in 10 hrs and 15 hrs respectively. Both the pipes are opened to fill the tank but when the tank is 1/6 full a leak develops in the tank through which 1/6 of the water supplied by both the pipes leak out. What is the total time taken to fill the tank?

(1) 7 hrs (2) 5 hrs (3) 6 hrs (4) 9 hrs (5) None of these

PIPES AND CISTERN

Q 12. Two pipes can separately fill a tank in 10 hrs and 15 hrs respectively. Both the pipes are opened to fill the tank but when the tank is 1/6 full a leak develops in the tank through which 1/6 of the water supplied by both the pipes leak out. What is the total time taken to fill the tank?

(1) 7 hrs **(2) 5 hrs** **(3) 6 hrs** **(4) 9 hrs** **(5) None of these**

PIPES AND CISTERN

Q 13. Two pipes can separately fill a tank in 30 hrs and 45 hrs respectively. Both the pipes are opened to fill the tank but when the tank is 2/3 full a leak develops in the tank through which 2/3 of the water supplied by both the pipes leak out. What is the total time taken to fill the tank?

(1) 25 hrs (2) 30 hrs (3) 35 hrs (4) 38 hrs (5) None of these

PIPES AND CISTERN

Q 13. Two pipes can separately fill a tank in 30 hrs and 45 hrs respectively. Both the pipes are opened to fill the tank but when the tank is 2/3 full a leak develops in the tank through which 2/3 of the water supplied by both the pipes leak out. What is the total time taken to fill the tank?

(1) 25 hrs (2) 30 hrs (3) 35 hrs (4) 38 hrs (5) None of these

PIPES AND CISTERN

Q 14. A cistern is normally filled in 4 hrs but takes 1 hr. longer to fill because of a leak in its bottom. If the cistern is full, the leak will empty it in _____hr.

(1) 10 hrs (2) 20 hrs (3) 15 hrs (4) 12 hrs (5) None of these

PIPES AND CISTERN

Q 14. A cistern is normally filled in 4 hrs but takes 1 hr. longer to fill because of a leak in its bottom. If the cistern is full, the leak will empty it in _____hr.

(1) 10 hrs (2) 20 hrs (3) 15 hrs (4) 12 hrs (5) None of these

PIPES AND CISTERN

Q 15. If three taps are opened together, a tank is filled in 6 hrs. One of the taps can fill it in 5 hrs and another in 7½ hrs. How does the third tap work?

(1) 6 hours, fill pipe (2) 8 hours, waste pipe (3) 6 hours, waste pipe

(4) 8 hours, fill pipe (5) None of these

PIPES AND CISTERN

Q 15. If three taps are opened together, a tank is filled in 6 hrs. One of the taps can fill it in 5 hrs and another in 7½ hrs. How does the third tap work?

(1) 6 hours, fill pipe
(2) 8 hours, waste pipe
(3) 6 hours, waste pipe
(4) 8 hours, fill pipe
(5) None of these

PIPES AND CISTERN

Q 16. Two pipes A and B can separately fill in 7½ and 5 minutes respectively and a waste pipe C can carry off 14 litres per minutes. If all the pipes are opened when the cistern is full, it is emptied in 1 hour. How many litres does the cistern hold?

(1) 40 litres (2) 30 litres (3) 325 litres (4) 45 litres

(5) None of these

PIPES AND CISTERN

Q 16. Two pipes A and B can separately fill in 7½ and 5 minutes respectively and a waste pipe C can carry off 14 litres per minutes. If all the pipes are opened when the cistern is full, it is emptied in 1 hour. How many litres does the cistern hold?

(1) 40 litres (2) 30 litres (3) 325 litres (4) 45 litres

(5) None of these

PIPES AND CISTERN

Q 17. Two pipes A and B can separately fill in 30 and 20 minutes respectively and a waste pipe C can carry off 6 litres per minute. If all the pipes are opened when the cistern is full, it is emptied in 60 minutes. How many litres does the cistern hold?

(1) 10 litres (2) 30 litres (3) 60 litres (4) 45 litres (5) None of these

PIPES AND CISTERN

Q 17. Two pipes A and B can separately fill in 30 and 20 minutes respectively and a waste pipe C can carry off 6 litres per minute. If all the pipes are opened when the cistern is full, it is emptied in 60 minutes. How many litres does the cistern hold?

(1) 10 litres (2) 30 litres (3) 60 litres (4) 45 litres (5) None of these

PIPES AND CISTERN

Q 18. There are 10 filling pipes each capable of filling a cistern alone in 6 minutes and 6 emptying pipes each capable of emptying a cistern alone in 8 minutes. All pipes are opened together and as a result, tank fills 22 litres of water per minute. Find the capacity of the tank.

(1) 48 litres (2) 36 litres (3) 24 litres (4) 16 litres

(5) None of these

PIPES AND CISTERN

Q 18. There are 10 filling pipes each capable of filling a cistern alone in 6 minutes and 6 emptying pipes each capable of emptying a cistern alone in 8 minutes. All pipes are opened together and as a result, tank fills 22 litres of water per minute. Find the capacity of the tank.

(1) 48 litres (2) 36 litres (3) 24 litres (4) 16 litres

(5) None of these

PIPES AND CISTERN

Q 19. Two pipes can fill a cistern in 10 and 15 hours respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom, 2 hrs extra are taken for the cistern to be filled up. If the cistern is full, in what time would the leak empty it?

(1) 20 hrs (2) 21 hrs (3) 24 hrs (4) 28 hrs (5) None of these

PIPES AND CISTERN

Q 19. Two pipes can fill a cistern in 10 and 15 hours respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom, 2 hrs extra are taken for the cistern to be filled up. If the cistern is full, in what time would the leak empty it?

(1) 20 hrs (2) 21 hrs (3) 24 hrs (4) 28 hrs (5) None of these

PIPES AND CISTERN

Q 20. A cistern has a leak which would empty it in 4 hours. A tap is turned on which admits 3 litres a minute into the cistern, and it is now emptied in 6 hours. How many litres does the cistern hold?

(1) 360 litres **(2) 1080 litres** **(3) 2160 litres** **(4) 2260 litres**

(5) None of these

PIPES AND CISTERN

Q 20. A cistern has a leak which would empty it in 4 hours. A tap is turned on which admits 3 litres a minute into the cistern, and it is now emptied in 6 hours. How many litres does the cistern hold?

(1) 360 litres **(2) 1080 litres** **(3) 2160 litres** **(4) 2260 litres**

(5) None of these

PIPES AND CISTERN

Q 21. A cistern has a leak which would empty it in 10 hours. A tap is turned on which admits 2 litres per hr. into the cistern, and it is now emptied in 15 hours. How many litres does the cistern hold?

(1) 50 litres (2) 60 litres (3) 45 litres (4) 360 litres (5) None of these

PIPES AND CISTERN

Q 21. A cistern has a leak which would empty it in 10 hours. A tap is turned on which admits 2 litres per hr. into the cistern, and it is now emptied in 15 hours. How many litres does the cistern hold?

(1) 50 litres (2) 60 litres (3) 45 litres (4) 360 litres (5) None of these

PIPES AND CISTERN

Q 22. One filling pipe A is 5 times faster than second filling pipe B. If B can fill a cistern in 36 minutes, then find the time when the cistern will be full if both fill pipes are opened together.

(1) 6 minutes (2) 8 minutes (3) 4 minutes (4) 12 minutes

(5) None of these

PIPES AND CISTERN

Q 22. One filling pipe A is 5 times faster than second filling pipe B. If B can fill a cistern in 36 minutes, then find the time when the cistern will be full if both fill pipes are opened together.

(1) 6 minutes **(2) 8 minutes** **(3) 4 minutes** **(4) 12 minutes**

(5) None of these

PIPES AND CISTERN

Q 23. 8 taps are fitted to a water tank. Some of them are water taps to fill the tank and the remaining are outlet taps used to empty the tank. Each water tap can fill the tank in 12 hours and each outlet tap can empty it in 36 hours. On opening all the taps, the tank is filled in 3 hours. Find the number of water taps.

(1) 5 (2) 4 (3) 3 (4) 2 (5) None of these

PIPES AND CISTERN

Q 23. 8 taps are fitted to a water tank. Some of them are water taps to fill the tank and the remaining are outlet taps used to empty the tank. Each water tap can fill the tank in 12 hours and each outlet tap can empty it in 36 hours. On opening all the taps, the tank is filled in 3 hours. Find the number of water taps.

(1) 5 (2) 4 (3) 3 (4) 2 (5) None of these

PIPES AND CISTERN

Q 24. 9 taps are fitted to a water tank. Some of them are water taps to fill the tank and the remaining are outlet taps used to empty the tank. Each water tap can fill the tank in 9 hours and each outlet tap can empty it in 9 hours. On opening all the taps, the tank is filled in 9 hours. Find the number of water taps.

(1) 4 (2) 5 (3) 6 (4) Can't be determined

(5) None of these

PIPES AND CISTERN

Q 24. 9 taps are fitted to a water tank. Some of them are water taps to fill the tank and the remaining are outlet taps used to empty the tank. Each water tap can fill the tank in 9 hours and each outlet tap can empty it in 9 hours. On opening all the taps, the tank is filled in 9 hours. Find the number of water taps.

(1) 4 (2) 5 (3) 6 (4) Can't be determined

(5) None of these

PIPES AND CISTERN

Q 25. A bath can be filled by the cold-water pipe in 10 minutes and by the hot water pipe in 15 minutes. A person leaves the bathroom after turning on both pipes simultaneously and returns at the moment when the bath should be full. Finding, however, that the waste pipe has been open, he now closes it. In 4 minutes more the bath is full. In what time would the waste pipe empty it?

(1) 9 min (2) 8 min (3) 12 min (4) 6 min (5) None of these

PIPES AND CISTERN

Q 25. A bath can be filled by the cold-water pipe in 10 minutes and by the hot water pipe in 15 minutes. A person leaves the bathroom after turning on both pipes simultaneously and returns at the moment when the bath should be full. Finding, however, that the waste pipe has been open, he now closes it. In 4 minutes more the bath is full. In what time would the waste pipe empty it?

(1) 9 min (2) 8 min (3) 12 min (4) 6 min (5) None of these

PIPES AND CISTERN

Q 26. A, B, C are pipes attached to a cistern. A and B can fill it in 20 and 30 minutes respectively, while C can empty it in 15 minutes. If A, B, C be kept open successively for 1 minute each, how soon will the cistern be filled?

(1) 167 min (2) 160 min (3) 166 min (4) 164 min (5) None of these

PIPES AND CISTERN

Q 26. A, B, C are pipes attached to a cistern. A and B can fill it in 20 and 30 minutes respectively, while C can empty it in 15 minutes. If A, B, C be kept open successively for 1 minute each, how soon will the cistern be filled?

(1) 167 min (2) 160 min (3) 166 min (4) 164 min (5) None of these

Q 27. Three pipes A, B and C were opened to fill a tank. Working alone, A, B and C require 10, 15 and 20 hours respectively. A was opened at 7 AM, B at 8 AM and C at 9 AM. At what time the tank would be completely filled, given that pipe C can only work for 3 hours at a stretch, and needs 1 hour standing time to work again.
(A) 12 : 00 PM (B) 12 : 30 PM (C) 1 : 30 PM (D) 1 : 00 PM

Q 27. Three pipes A, B and C were opened to fill a tank. Working alone, A, B and C require 10, 15 and 20 hours respectively. A was opened at 7 AM, B at 8 AM and C at 9 AM. At what time the tank would be completely filled, given that pipe C can only work for 3 hours at a stretch, and needs 1 hour standing time to work again.

(A) 12 : 00 PM (B) 12 : 30 PM (C) 1 : 30 PM (D) 1 : 00 PM

THANK YOU