

Pipes and Cisterns

1. If Pipes A and B can fill a tank in 15 min and 20 mins respectively and pipe C empties the tank in 12 mins. what will be the time taken by A, B and C together to fill the tank completely?
(A) 25 min (B) 30 min
(C) 40 min (D) 20 min
(E) 35 min
2. Pipes P and Q together can fill an empty tank in 6 hours. Pipe Q alone can fill the empty tank in 5 hours. How long will pipe P take to vacate the tank if it is half filled.
(A) 12 hours (B) 12.5 hours
(C) 18 hours (D) 15 hours
(E) 10 hours
3. Two pipe A and B can fill a cistern in 15 hours and 12 hours respectively. Both pipe opened simultaneously, due to a leakage in cistern it take 20 min extra to fill it up. Find the time taken by the leakage to empty the full cistern alone.
(A) 80 hours (B) 120 hours
(C) 180 hours (D) 150 hours
(E) 140 hours
4. Three pipes A, B and C working together can fill a cistern in 11 hours. After working at it together for 3 hours, B is closed, and A and C filled it in 16 more hours. B alone can fill the cistern in
(A) 22 hours (B) 20 hours
(C) 16 hours (D) 32 hours
(E) None of these
5. To fill a cistern, pipes X, Y and Z take 10 minutes, 30 minutes and 15 minutes respectively. What is the time that the three pipes together will take to fill the cistern?
(A) 2 min (B) 5 min
(C) 7 min (D) 8 min
(E) None of these
6. Two pipes A and B can fill a tank in 60 hours and 40 hours respectively and pipe C can empty the tank in 15 hours. If pipes A and B are opened for 12 hours, then pipe C is also opened. After how many hours, the tank will be emptied?
(A) 15 hours (B) 20 hours
(C) 12.5 hours (D) 10 hours
(E) None of these
7. A and B are inlet pipes which take 5 hours and 9 hours respectively alone to fill the tank. C is outlet pipe which alone can empty the tank in 15 hours. If all three pipes are opened simultaneously, then in what time the tank will be filled completely?
(A) $5\frac{1}{11}$ hours (B) $4\frac{1}{11}$ hours
(C) $4\frac{8}{11}$ hours (D) $3\frac{1}{11}$ hours
(E) $6\frac{5}{11}$ hours
8. A, B & C are three inlet pipes. Time taken by A & B together to fill half of the tank is same as time taken by pipe C alone to fill one – sixth of the tank. If A, B & C together can fill the tank in 9 hours, then find time taken by pipe C alone to fill the tank?
(A) 24 hours (B) 18 hours
(C) 28 hours (D) 36 hours
(E) 42 hours
9. P, Q and R are 3 small pumps fitted to a tank. S is a large pump fitted to the tank. Q is 50% more efficient than P. R is $33\frac{1}{3}\%$ more efficient than Q. S is 50% more

efficient than R. All of the pipes are used to fill the tank. What is the ratio of the time taken by pumps P and R to fill the tank together to the time taken by pumps Q and S to fill the tank together ?

- (A) 3 : 2 (B) 4 : 3
(C) 2 : 3 (D) 3 : 5
(E) None of these

10. Pipe A can fill a tank in 45 hr, pipe B is 50% more efficient than A and pipe C can fill the same tank in 7.5 hr less than B. A and B opened together for X hr and closed after that and pipe C fill remaining tank in (X + 9) hr, if the ratio between tank filled by (A + B) together to tank filled by pipe C is 1 : 2. Find the value of X?

- (A) 3 hr (B) 4 hr
(C) 6 hr (D) 8 hr
(E) 7 hr

11. Two taps can fill a tank in 20 minutes and 30 minutes respectively. There is an outlet tap at exactly half level of that rectangular tank which can pump out 50 litres of water per minute. If the outlet tap is open, then it takes 24 minutes to fill an empty tank. What is the volume of the tank?

- (A) 900 litres (B) 1800 litres
(C) 1200 litres (D) 2400 litres
(E) 3600 litres

12. Pipes A and B can completely fill the tank working alone in 4 and 5 hours respectively. Pipe C can empty the tank in 3 hrs. When the tank is completely empty pipe A is opened first. Pipe C is opened at the time when tank is half filled. At last pipe B is opened when the tank is one fourth filled. Find the total time taken to fill the tank completely?

- (A) 80/7 hours (B) 5 hours
(C) 87/7 hours (D) 73/7 hours
(E) 94/7 hours

13. A bathtub can be filled by the cold water pipe in 10 min and by hot water pipe in 15 min (independently each). A person leaves the bathroom after turning on both pipes simultaneously and returns at the moment when the bath should have been full. But finds, that the waste pipe has been open, he now closes it. In 4 min more, bathtub is full. In what time would be the waste pipe empty it?

- (A) 9 min (B) 12 min
(C) 15 min (D) 14 min
(E) None of the Above

14. A tank has 4 inlet pipes. Through the first 3 inlet pipes, the tank can be filled in 12 min; through the second, third, fourth inlet pipes, it can be filled in 15 minutes; and through the first and the fourth inlet pipes in 20 minutes. How much time will it take all the second and third inlet pipes alone to fill up the the tank?

- (A) 10 minutes (B) 12 minutes
(C) 16 minutes (D) 20 minutes
(E) Cannot be determined

15. A purifier had a total of 15 valves among which few were connected to fill the purifier while the rest of the valves were used to drain the purified water. Each of the valves used for the purpose of filling could fill the purifier in 15 hours while each of the drain valves would take 30 hours to drain the purifier. If all the pipes are kept open and if it took 2 hours to completely fill the purifier then what % of the total pipes were reserved for draining purpose?

- (A) 33.33% (B) 44.44%
(C) 39.39% (D) 48.50%
(E) 47.65%

16. The capacity of a tank is 100 liter. Two inlet pipes A and B whose flow rate are 5 liter/min and 3 liter/min are fitted into it. The tank is connected to an outlet pipe C whose

flow rate at Nth min is defined as $f = \frac{1}{2} N$. If all three pipes are opened at the same time, find out the maximum % of the tank which can get filled by this arrangement?

- (A) 80% (B) 65%
(C) 60% (D) 100%
(E) 75%

17. Two pipes A and B running together can fill a tank in $20\frac{2}{3}$ minutes. Now the flow rate of A is increased such that it can fill the tank in one minute less time than before and the flow rate of B is decreased such that it takes 2 more minutes than before to fill the tank. With their changed flow rates it takes 7 minute for A and B to fill the tank. How much time A and B take respectively to fill the tank alone with their original flow rate?

- (A) 15 min, 20 min (B) 12 min, 15 min
(C) 15 min, 12 min (D) 15 min, 30 min
(E) 25 min, 30 min

18. Three taps A, B and C are used to fill a cistern with same types of milk and together they can fill the cistern completely in 45 min. Ratio of efficiency of taps A, B and C is 3: 4: 5 and also some charges are applied on each tap when opened. Ratio of charges

applied on each tap per minute is 2: 3: 4. If the cistern is already filled up to $\frac{8}{15}$ th of total capacity and now the milkman closes any one tap randomly, then find the ratio of total cost to fill initial $\frac{8}{15}$ th of the cistern when all the taps are opened to the total cost to fill the remaining cistern (when any one tap is closed randomly) at minimal cost?

- (A) 4:5 (B) 6:5
(C) 5:6 (D) 3:2
(E) None of these

19. A tank is connected with 3 inlet pipes and 2 outlet pipes. The inlet flow of each inlet pipe is 8 L/min while the efficiency of each outlet pipe is 187.5% of efficiency of each inlet pipe. Initially the tank is completely filled with water and all the pipes are opened for 45 min. After 45 min the efficiency of each inlet pipe is increased by 50% and efficiency of each outlet pipe is decreased by 10% and now all the pipes can again fill the tank in 'T' min. Find the value of 'T'.

- (A) 45 (B) 30
(C) 50 (D) 60
(E) None of these