

Distribution System

Q.1 The suitable layout of a distribution system for irregularly growing town is

- (a) dead end system
- (b) grid iron system
- (c) radial system
- (d) ring system

Q.2 Hardy cross method of analysis of distribution system

- 1. involves successive trials
- 2. takes economic aspects into account
- 3. is time consuming

The correct answer is

- (a) only 1
- (b) 1 and 2
- (c) 1 and 3
- (d) All are correct

Q.3 The water supply to a house begins with the connection of the service pipe with the municipal water mains. The connection comprises:

- 1. Stopcock
- 2. Goose neck
- 3. Ferrule
- 4. Water meter

The correct sequence of these connections is

- (a) 1, 2, 3, 4
- (b) 3, 1, 2, 4
- (c) 3, 2, 1, 4
- (d) 1, 2, 4, 3

Q.4 P.V.C pipes can withstand pressure head of water upto

- (a) 25 m
- (b) 50 m
- (c) 75 m
- (d) 100 m

Q.5 Match List-I with List-II and select the correct answer using codes given below the lists:

List-I

- A. Cast iron pipe
- B. Asbestos cement pipe
- C. Plain ended pipes subjected to frequent vibrations
- D. G.I. pipe

List-II

- 1. Simplex joint
- 2. Spigot and socket joint
- 3. Screwed joint
- 4. Victaulic joint

Codes:

- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 1 | 3 | 2 | 4 |
| (b) | 2 | 1 | 4 | 3 |
| (c) | 3 | 4 | 2 | 1 |
| (d) | 4 | 2 | 1 | 3 |

Q.6 Minimum residual pressure that should be provided at the ferrule point of a two-storey building is

- (a) 7 m
- (b) 12 m
- (c) 17 m
- (d) 20 m

Q.7 Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I

- A. Dead-end system
- B. Grid-iron system
- C. Ring system
- D. Radial system

List-II

- 1. Equal pressure and multiple flow paths
- 2. Both economy and reasonably equal pressure
- 3. Economy and simplicity
- 4. Zonal distribution

Codes:

- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 3 | 2 | 1 | 4 |
| (b) | 2 | 4 | 1 | 3 |
| (c) | 3 | 1 | 2 | 4 |
| (d) | 2 | 1 | 4 | 3 |

Q.8 The purpose of providing a balancing reservoir in a water supply distribution system is to

- (a) equalise pressures in the distribution system
- (b) store adequate quality of water to meet requirements in case of breakdown of inflow
- (c) store adequate fire fighting reserve
- (d) take care of fluctuations in the rate of consumption

Q.9 Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I

- A. Test with sound waves in the audible frequency range
- B. Fire flow tests
- C. Hydraulic gradient tests
- D. Coefficient tests

List-II

- 1. To determine the ability of a distribution system to transmit water with adequate residual pressure.
- 2. Location and isolation of leaks.
- 3. To determine the efficiency and adequacy of a distribution system during days of high demand.
- 4. To determine the internal condition of pipeline with respect to friction loss

Codes:

- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 2 | 1 | 3 | 4 |
| (b) | 2 | 3 | 1 | 4 |
| (c) | 4 | 1 | 3 | 2 |
| (d) | 4 | 3 | 1 | 2 |

Q.10 The distribution system is not designed for residual pressure more than

- (a) 17 m
- (b) 20 m
- (c) 22 m
- (d) 25 m

Q.11 The disadvantages of dead end system of water supply distribution are

- 1. the pressure at the dead ends becomes undesirably low in case of additional extension
- 2. difficult to maintain residual chlorine levels at the dead ends
- 3. the time of repairs, service connections beyond the point of repair are deprived of water

Which of these statements are correct?

- (a) Both 1 and 2
- (b) Both 1 and 3
- (c) Both 2 and 3
- (d) 1, 2 and 3

Q.12 The advantages of grid iron system of water distribution system are

- 1. because of different interconnections, the dead ends are completely eliminated and, therefore, water remains in continuous circulation, and hence not liable to pollution due to stagnation
- 2. in case of repairs, very small area will be devoid of complete supply
- 3. since the water reaches at different places through more than one route, the discharge to be carried by each pipe, the friction loss, and the size of the pipe get reduced
- 4. during fire, more water can be directed towards the affected point from various directions by closing and manipulating the various cut-off valves

Which of these statements are correct?

- (a) 1, 2 and 3
- (b) 2, 3, and 4
- (c) 1, 2 and 4
- (d) 1, 2, 3 and 4

Q.13 Which one of the following valve is seldom used in water distribution systems because of high head loss characteristics?

- (a) Butterfly
- (b) Globe
- (c) Plug
- (d) Sluice

Q.14 Consider the following statements:

The disadvantages of employing steel pipes in conveyance and distribution of water are, they

- 1. cannot withstand high negative pressures or vacuums that may be created in them, especially the combined effects of vacuum and external loads of backfill and traffic.
- 2. are easily affected by acidic or alkaline waters and even atmospheric agencies may produce adverse effects on them.
- 3. cannot be used for high pressures. (Generally not used for pressures above 7 kg/cm²)

Which of these statements is/are correct?

- (a) 1, 2 and 3
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1 only

Q.15 The method, which is most widely used for analysing and designing the pipes of all types of complex water distribution networks, is:

- (a) equivalent pipe method
- (b) Hardy cross method
- (c) circle method
- (d) All of the above

Q.16 Consider the following statements:

In a water supply system,

1. drain valves are provided at elevated or higher, points to remove accumulated air.
2. reflux valve allows flow in one direction only.
3. drain valves are provided at low points to remove silt and other deposits.

Which of these statement/s is/are correct?

- (a) 1, 2 and 3
- (b) 2 only
- (c) 2 and 3 only
- (d) 3 only

Q.17 Consider the following statements:

Assertion (A): The hydraulic efficiency of pipes in distribution system will diminish with time.

Reason (R): Clearing of these pipes is cheap but it doesn't have much effect on hydraulic efficiency.

- (a) both A and R are true and R is the correct explanation of A
- (b) both A and R are true but R is not a correct explanation of A
- (c) A is true but R is false
- (d) A is false but R is true

Q.18 Consider the following statements related to mass curve:

1. The supply is also called as outflow and demand as inflow.
2. It is a plot of accumulated supply or demand versus time.

Which of these statement/s is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answers Distribution System

1. (a) 2. (c) 3. (c) 4. (d) 5. (b) 6. (b) 7. (c) 8. (d) 9. (a) 10. (c)
11. (d) 12. (d) 13. (c) 14. (b) 15. (b) 16. (c) 17. (c) 18. (b)

Explanations Distribution System

1. (a)

In the dead end system, which is also sometimes called tree system, there is one main supply line, from which originates a number of submain pipes. This type of layout may have to be adopted for older towns which have developed in a haphazard manner.

4. (d)

P.V.C. pipes can withstand pressure head of water up to 100 m or 10 kg/cm².

10. (c)

The distribution system is not designed for residual pressure more than 22 m. Hence, for high rise buildings booster pumps should be provided.

16. (c)

Drain valves are provided to remove the entire water from within a pipe (after closing the water supply). These are small gated off-takes which are provided at low points. These are also known as blow off valves or scour valves.

17. (c)

The hydraulic efficiency of pipes will diminish with time because of tuberculation, incrustation and sedimentation deposits. Cleaning, even though is costly, may pay off with increased hydraulic efficiency and increased pressures throughout the system.

18. (b)

The supply is also called as inflow and demand as outflow.