BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – Dip.CE-2022
Course Name – Building Services and Maintenance
Course Code - DCEPE502C
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the most common type of intake structure used for river water.
a) Submerged intake b) Canal intake
c) River intake d) Floating intake

(ii) State the primary factor affecting the rate of water demand in urban areas.
a) Industrial growth b) Climate variability
c) Population size d) Agricultural practices

(iii) Identify the chemical parameter that is crucial in assessing the corrosiveness of water.
a) pH level b) Chloride concentration
c) Nitrate levels d) Dissolved oxygen

(iv) Identify the principles of coagulation in water treatment.
a) Destabilization of colloidal particles, formation of flocs b) Addition of dissolved gases, removal of solids
c) Filtration through membranes, chemical disinfection d) Sedimentation of large particles, chlorine addition

(v) Identify the types of coagulants used in water treatment.
a) Alum, ferric chloride, lime b) Chlorine, ozone, UV light
c) Sand, gravel, charcoal d) Sodium, potassium, calcium

(vi) Identify the types of sedimentation tanks used in water treatment.
a) Rectangular, circular, hopper-bottom b) Cylindrical, conical, cubic
c) Elliptical, spherical, trapezoidal d) Flat-bottom, sloped-bottom, round-bottom

(vii) Choose the layout system known for providing redundancy and minimizing the impact of pipe failures.

a) Radial system
b) Grid iron system
c) Dead-end system
d) Circular system

(viii) Act to describe the main disadvantage of using a pumping system for water distribution.

a) High operational cost
b) Complex operation
c) Limited coverage area
d) Requires extensive maintenance

(ix) Write the advantage of using an elevated tank in water distribution.

a) Reduces energy costs
b) Simplifies construction
c) Minimizes space requirements
d) Enhances water treatment

(x) Identify the type of sewer that carries only domestic waste.

a) Combined sewer
b) Storm sewer
c) Sanitary sewer
d) Industrial sewer

(xi) Identify the key indicator of organic pollution in sewage.

a) pH
b) B.O.D.
c) C.O.D.
d) Total Suspended Solids

(xii) Classify the term used for the amount of oxygen required by bacteria to decompose organic matter in sewage.

a) C.O.D.
b) B.O.D.
c) TSS
d) pH

(xiii) Classify the type of screen used to remove large objects from sewage.

a) Bar Screen
b) Drum Screen
c) Fine Screen
d) All of the Above

(xiv) Identify the process used to separate oils and fats from sewage.

a) Sedimentation
b) Skimming
c) Aeration
d) Grit Removal

(xv) Classify the process where sewage is aerated and bacteria are allowed to digest the organic matter.

a) Oxidation Ditch
b) Trickling Filter
c) Activated Sludge Process
d) Grit Removal

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Describe the variations in water demand and their causes. (3)
3. State the methods of forecasting population for water demand. (3)
4. Discuss the process and significance of the Jar Test in coagulation. (3)
5. Write a brief description of the different types of pipes used for water conveyance and their applications. (3)
6. Classify the different types of water intake structures. (3)

OR

Explain the factors affecting the rate of water demand. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Identify two major types of water sources and describe the key differences between them. (5)
8. Compare the mechanisms and types of filters used in water filtration. (5)
9. Modify an existing water distribution system by incorporating a combined system, and write a detailed explanation of how it improves overall efficiency. (5)

10. Evaluate the effectiveness of different plumbing systems (one-pipe vs. two-pipe). (5)
11. Consider the role of self-cleansing velocity in preventing sewer blockages. (5)
12. Classify the different types of service reservoirs and explain their respective roles in a water distribution system. (5)

OR

Explain the functions of various types of joints in pipelines and classify their usage based on different pipeline scenarios. (5)

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