16013

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – Dip.CE-2022/Dip.CE-2023
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) State the primary objective of a water supply scheme.

a) Ensure equitable distribution
b) Provide safe and adequate water
c) Reduce water wastage
d) Enhance groundwater recharge

(ii) List the components typically included in a water supply scheme.

a) Intake structures, treatment plants, distribution network
b) Sewage treatment, solid waste management, rainwater harvesting
c) Drainage systems, irrigation canals, dams
d) Reservoirs, power plants, highways

(iii) State the main difference between surface water and subsurface water sources.

a) Surface water is more mineral-rich
b) Subsurface water is usually found in larger quantities
c) Surface water is subject to evaporation
d) Subsurface water is easier to purify

(iv) Select the process of plain sedimentation in water treatment.

a) Removal of suspended particles by gravity
b) Addition of chlorine for disinfection
c) Filtration through sand beds
d) Aeration to remove gases

(v) Identify the purpose of plain sedimentation in water treatment.

a) To reduce turbidity
b) To add chemicals
c) To increase hardness
d) To remove dissolved gases

(vi) Choose the type of joint best suited for connecting large diameter pipes in a water distribution system.

a) Flanged joint
b) Mechanical joint
c) Bell and spigot joint
d) Threaded joint

(vii) Choose the valve type that is typically used to control the flow rate in a water distribution system.

a) Gate valve
b) Check valve
c) Pressure relief valve
d) Ball valve

(viii) Choose the most common material for small-diameter water service pipes.

a) Iron
b) PVC
c) Concrete
d) Copper

(ix) Select the definition that best describes a water closet.

a) A sink used for washing hands
b) A device for flushing human waste
c) A basin for washing dishes
d) A pipe for draining rainwater

(x) Identify the fitting used to flush waste from a water closet.

a) Wash basin
b) Flushing cistern
c) Sink
d) Urinal

(xi) State the main function of a trap in plumbing.

a) To allow air circulation
b) To prevent sewer gases from entering buildings
c) To increase water pressure
d) To remove solid waste

(xii) Classify the treatment step that involves settling of solids by gravity.

a) Screening
b) Sedimentation
c) Aeration
d) Filtration

(xiii) Select the process used for breaking down organic matter in sewage by microorganisms.

a) Oxidation Pond
b) Sludge Digestion
c) Trickling Filter
d) Septic Tank

(xiv) Select the treatment method that involves rotating biological contactors for sewage treatment.

a) Activated Sludge Process
b) Oxidation Ditch
c) Trickling Filter
d) Septic Tank

(xv) Identify the method used for small-scale, on-site sewage treatment typically used in rural areas.

a) Oxidation Pond
b) Septic Tank
c) Trickling Filter
d) Activated Sludge Process

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Describe the objectives and components of water supply schemes. (3)
3. Discuss the process and significance of the Jar Test in coagulation. (3)
4. Discuss the application and forms of chlorination in water treatment. (3)
5. State the differences between Indian and European water closets. (3)
6. Explain the process of grit removal and its importance in sewage treatment. (3)

OR

Classify the types of disposal methods for treated sewage. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Observe the A tube well of 30 cm diameter penetrates an unconfined aquifer. During the pumping test, the following data was obtained: (a) Height of static water level from bottom of aquifer = 50 m. (b) Height of drawdown from bottom of aquifer = 45 m. (c) Radius of circle of influence = 300 m. (d) Coeff. of permeability = 50 m/day. Calculate the discharge of the well. (5)
8. Classify the types of solids and compounds tested in water quality analysis. (5)
9. Compare the objectives and methods of aeration with other water treatment processes. (5)
10. State the features of a good sanitary fitting and its maintenance requirements. (5)
11. Evaluate the differences between a rain water pipe and a soil pipe in terms of their construction and function. (5)
12. Discuss and explain the recycling and reuse methods for domestic waste. (5)

OR

Explain and classify the various methods for skimming and grit removal in sewage treatment. (5)

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