



# BRAINWARE UNIVERSITY

Term End Examination 2023

Programme – B.Tech.(CE)]-2021

Course Name – Water Resources Engineering

Course Code - PCC-CE404

( Semester IV )

LIBRARY  
Brainware University  
Barrow, Kolkata - 700120

BRUN  
UNIVERSITY  
KOLKATA

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 types of sediment load.

- |   |                                      |
|---|--------------------------------------|
| a) Bedload and Suspended load                 | b) Bedload and Dissolved load        |
| c) Bedload, Dissolved load and Suspended load | d) Suspended load and Dissolved load |

(ii) Identify a remedial measure for water-logging.

- |  |  |
|--|--|
| a) By lowering the F.S.L of the canals     | b) Quick disposal of rainwater         |
| c) Installation of lift irrigation systems | d) Controlling seepage from the canals |

(iii) Choose a factor that creates temporary and continuous waterlogging.

- |                              |                    |
|------------------------------|--------------------|
| a) Submergence due to Floods | b) Flat Topography |
| c) Impervious Obstruction    | d) Excessive Rains |

(iv) Select the number of components the diversion headwork is divided into.

- |      |      |
|------|------|
| a) 8 | b) 5 |
| c) 4 | d) 7 |

(v) Choose the graphical representation of average rainfall between rainfall excess.

- |                 |                    |
|-----------------|--------------------|
| a) Hyetograph   | b) Hydrograph      |
| c) S-hydrograph | d) Unit hydrograph |

(vi) Choose the irrigation method where continuous supply of water is assured throughout the crop period.

- |              |               |
|--------------|---------------|
| a) Flood     | b) Artificial |
| c) Perennial | d) Inundation |

(vii) Select the correct relation between duty (D) Delta ( $\Delta$ ) and base period (B).

- |                           |                           |
|---------------------------|---------------------------|
| a) $\Delta = (86.4B / D)$ | b) $\Delta = (864B / D)$  |
| c) $\Delta = (8.64B / D)$ | d) $\Delta = (8640B / D)$ |

(viii) Identify the unit for measuring rainfall.

- |         |            |
|---------|------------|
| a) cm   | b) mm      |
| c) Feet | d) No unit |



- (ix) Rename trickle irrigation from the following
- |                                |                           |
|--------------------------------|---------------------------|
| a) Furrow Irrigation Method    | b) Check Flooding         |
| c) Sprinkler Irrigation Method | d) Drip Irrigation Method |
- (x) Identify which irrigation method uses supply ditch, borders, ridges.
- |                           |                    |
|---------------------------|--------------------|
| a) Check Flooding         | b) Basin Flooding  |
| c) Drip Irrigation Method | d) Border Flooding |
- (xi) Choose the quality of a good irrigation method from the following
- |                        |                    |
|------------------------|--------------------|
| a) Leached Fertilizers | b) Increased Yield |
| c) Drainage Troubles   | d) Soil Erosion    |
- (xii) Identify the policy that was framed in India to reduce the losses.
- |                          |                            |
|--------------------------|----------------------------|
| a) Water Law             | b) Policy of Water         |
| c) National Water Policy | d) Irrigation Water Policy |
- (xiii) Identify the name of first watering before sowing the crop.
- |          |             |
|----------|-------------|
| a) Paleo | b) Kor      |
| c) Delta | d) flooding |
- (xiv) Rename superfluous water.
- |                      |                        |
|----------------------|------------------------|
| a) capillary water   | b) gravitational water |
| c) hydroscopic water | d) saturation capacity |
- (xv) Identify an area that is large in quantity compared to others.
- |                                 |                                      |
|---------------------------------|--------------------------------------|
| a) Gross Commanded Area (G.C.A) | b) Culturable Commanded Area (C.C.A) |
| c) Culturable Cultivated Area   | d) Culturable Uncultivated Area      |

**Group-B**

(Short Answer Type Questions)

3 x 5=15

2. Explain the sedimentation in a reservoir. (3)
3. Define - a) Hydraulic jump, b) Undular jump, c) Direct jump (3)
4. Explain the Time factor, Capacity factor and Crop ratio. (3)
5. Define delta and duty and write their relation. (3)
6. Write the formulas available to convert dependable rainfall value into dependable yield value and hence elaborate Lacey's formula. (3)

OR

Write Thiem's equilibrium formula for unconfined as well as confined aquifers and also write (3) Thiem's assumptions made for derivation of the equilibrium formula.

**Group-C**

(Long Answer Type Questions)

5 x 6=30

7. A pumping test was made in a medium sand and gravel to a depth of 15 m where a bed of clay was encountered. The normal ground water level was at the surface. Observation holes were located at distances of 3 m and 7.5 m from the pumped well. At a discharge of 3.6 litres/sec from the pumping well, a steady state was attained in about 25 hrs. The drawdown at 3 m was 1.65 m and at 7.5 m was 0.36 m. Evaluate the coefficient of permeability of the soil. (Hint- Use Thiem's formula for unconfined aquifer). (5)
8. Describe perennial irrigation. (5)
9. Write the measures you would take to improve the duty of water. (5)
10. Explain Canal breaches and its possible causes. (5)
11. Discuss crop seasons in India and their principal crops (5)
12. Explain flood irrigation. (5)

OR

Explain Free flooding or ordinary flooding. (5)

\*\*\*\*\*