GUJARAT TECHNOLOGICAL UNIVERSITY

DI -5 SEMESTER – OLD PAPER – W23 TO S25 – QUESTION BANK(English)

Subject Name & Code:

Irrigation Engineering- 4350607

Unit I: Introduction and Water Requirement of Crops

Repeated Questions:

1. **Define/Explain the relationship between Duty (D), Delta (Δ), and Base period (B). (Often requires deriving the formula)**
    - Appeared in: WIN23 (Q5a, 03 marks), WIN24 (Q1b, 04 marks), SUM25 (Q2a, 03 marks)
2. **What is water logging? State its causes and preventive measures.**
    - Appeared in: SUM24 (Q1c, 07 marks), WIN23 (Q3a, 03 marks & Q3c(OR), 07 marks), SUM25 (Q1c(OR), 07 marks)
3. **Explain Gross Command Area (G.C.A.), Cultivable Command Area (C.C.A.), and Intensity of Irrigation.**
    - Appeared in: SUM24 (Q2c, 07 marks), SUM25 (Q2a(OR), 03 marks)
4. **Define the terms: (i) Crop period (ii) Base period**
    - Appeared in: SUM24 (Q2b, 04 marks), WIN24 (Q1b, 04 marks)

Other Important Questions:

5. Explain factors affecting consumptive use of water. (SUM24 - Q2a, 03 marks)
6. Define the terms: (iii) Duty (D) (iv) Delta (Δ) (SUM24 - Q2b, 04 marks)
7. Define the terms: (iii) Kor depth (iv) Kor period (WIN24 - Q1b, 04 marks)
8. Write Merits & Demerits of Irrigation. (WIN23 - Q1b, 04 marks)
9. Explain: Crop period, Core depth, Wilting point, Soil water – Plant relationship. (WIN23 - Q1c, 07 marks)
10. List out Factors affecting Duty and suggest methods of improving duty. (WIN23 - Q1c(OR), 07 marks), (SUM25 - Q1c, 07 marks)
11. Write a note on consumptive use of water. (SUM25 - Q2b(OR), 04 marks)
12. What is Irrigation Engineering? Give the necessity of irrigation engineering. (SUM25 - Q1a, 03 marks)
13. Write a note on ill-effects of over irrigation. (SUM25 - Q1b, 04 marks)

14. **Numerical:** One crop having delta(Δ) is 50 cm and base period(B) is 130 days. Calculate the duty [D] in hectare/cumec. (WIN23 - Q2c, 07 marks)
15. Define term i) Cumec day ii) Field capacity iii) Capillary water iv) Hygroscope water (WIN23 - Q2c(OR), 07 marks)
16. Define term i) Cumec day ii) Field capacity iii) Core depth iv) Wilting point. (SUM24 - Q2b(OR), 04 marks)

Unit II: Methods of Irrigation

Repeated Questions:

1. **Explain/Draw the layout of the Drip Irrigation system and state its advantages/disadvantages.**
    - Appeared in: SUM24 (Q1c(OR), 07 marks), WIN23 (Q2b, 04 marks & Q2b(OR), 04 marks), SUM25 (Q2b, 04 marks)
2. **Explain/Draw the layout of the Sprinkler Irrigation system (including portable systems) and state its advantages/disadvantages.**
    - Appeared in: SUM24 (Q1c, 07 marks & Q2c, 07 marks), WIN23 (Q2a, 03 marks & Q2a(OR), 03 marks), SUM25 (Q2c, 07 marks)
3. **List and explain various methods of irrigation.**
    - Appeared in: WIN24 (Q2b, 04 marks), WIN23 (Q2c, 07 marks)

Other Important Questions:

4. Explain furrow irrigation method with a neat sketch. (SUM24 - Q1a, 03 marks), (SUM25 - Q2c(OR), 07 marks)
5. Differentiate between drip irrigation and sprinkler irrigation. (WIN24 - Q2c, 07 marks)
6. Explain Sub-surface irrigation method. (WIN24 - Q2b, 04 marks)
7. Write down methods of irrigation and explain each of them in brief. (WIN23 - Q2c, 07 marks)
8. Explain factors affecting the duty of irrigation water. (SUM24 - Q1b, 04 marks)
9. Write a note on "Assessment of irrigation water". (SUM24 - Q2c(OR), 07 marks)

Unit III: Reservoir Planning, Water Logging, and Land Reclamation

Repeated Questions:

1. **Explain the losses of water from a reservoir.**
    - Appeared in: WIN24 (Q1a, 03 marks), SUM25 (Q3b(OR), 04 marks)
2. **Write points for the selection of a site for a reservoir.**
    - Appeared in: WIN23 (Q3c, 07 marks), SUM25 (Q3b, 04 marks)
3. **Write in detail about the Zones of storage in a reservoir.**
    - Appeared in: WIN24 (Q2b(OR), 04 marks), WIN23 (Q3b, 04 marks)

Other Important Questions:

4. What is silting of the reservoir? Explain factors affecting silting. (SUM25 - Q3c, 07 marks)
5. What are the causes of sedimentation in a reservoir? (SUM25 - Q3a(OR), 03 marks)
6. Describe the investigation of reservoir planning before construction. (WIN23 - Q3c, 07 marks)
7. Write a note on Land Reclamation. (WIN24 - Q1c(OR), 07 marks)
8. Describe soil reclamation. Explain its effects in detail. (SUM25 - Q3c(OR), 07 marks)
9. Write a note on the useful life of a reservoir. (SUM25 - Q3a, 03 marks)
10. Write different methods of sedimentation control of reservoir and explain any one in detail. (WIN23 - Q3c(OR), 07 marks)
11. Write economic height of dam. (WIN23 - Q3c(OR), 07 marks)
12. State the Factors affecting silting of the reservoir. (WIN24 - Q5b(OR), 04 marks)

Unit IV: Dams and Spillways

Repeated Questions:

1. **Draw a neat sketch of a Gravity Dam and label its components.**
   - Appeared in: WIN23 (Q4b, 04 marks), SUM25 (Q4a(OR), 03 marks implied)
2. **List out types of Spillways and draw a sketch of any one.**
   - Appeared in: SUM24 (Q3j, 03 marks), WIN23 (Q4a, 03 marks), SUM25 (Q4c, 07 marks)
3. **State types of failures of dams and explain their remedial measures.**
   - Appeared in: WIN23 (Q4c, 07 marks), SUM25 (Q4c(OR), 07 marks)
4. **List out with a sketch the Forces acting on a gravity dam.**
   - Appeared in: SUM24 (Q3h, 03 marks), WIN24 (Q2a, 03 marks), WIN23 (Q4b(OR), 04 marks)
5. **Write advantages and disadvantages of an Earthen Dam.**
   - Appeared in: SUM24 (Q3d, 03 marks), WIN24 (Q3b(OR), 04 marks)

Other Important Questions:

6. Draw a neat sketch of an Earthen dam showing all component parts. (WIN24 - Q4a, 03 marks), (WIN23 - Q4a(OR), 03 marks)
7. Describe the function of a toe filter and relief wells in an earthen dam. (SUM24 - Q3a, 03 marks), (WIN23 - Q3b(OR), 04 marks)
8. What are spillways? List out their types and components. (SUM25 - Q4c, 07 marks)
9. Define Energy dissipater in a dam. (SUM24 - Q3g, 03 marks), (SUM25 - Q4a(OR), 03 marks)
10. Explain with a neat sketch: i) Tunnel Spillway ii) Shute Spillway iii) Overflow Spillway. (WIN24 - Q4c, 07 marks)
11. Explain Ogee spillway. (WIN24 - Q3a(OR), 03 marks)
12. Explain Shaft spillway with a sketch. (WIN24 - Q2a(OR), 03 marks)
13. Enlist the types of gates commonly used for spillways. Explain anyone. (WIN24 - Q3a, 03 marks)
14. Differentiate between rock-fill dam and composite dam. (WIN24 - Q3b, 04 marks)
15. Enlist modes of failure of a gravity dam. Explain any one in brief. (SUM25 - Q4a, 03 marks)
16. Explain piping in an earthen dam. (SUM25 - Q5b(OR), 04 marks)
17. Define Energy dissipater and explain types of spillways based on the most prominent feature with a sketch. (WIN23 - Q4c(OR), 07 marks)

Unit V: Canal Irrigation and Cross-Drainage Works

Repeated Questions:

1. **Explain the difference between Kennedy's and Lacey's Theory.**
   - Appeared in: SUM24 (Q3k, 03 marks), WIN24 (Q4b, 04 marks), WIN23 (Q5a(OR), 03 marks)
2. **Draw the cross-section of an irrigation channel/canal and explain its main components.**
   - Appeared in: WIN24 (Q5c, 07 marks), WIN23 (Q5c, 07 marks)
3. **List the types of Canal Lining.**
   - Appeared in: SUM24 (Q3l, 03 marks), WIN23 (Q5a, 03 marks)
4. **Write a short note on Canal Head Regulators and Cross Regulators with a sketch.**
   - Appeared in: WIN24 (Q4c(OR), 07 marks), WIN23 (Q5c, 07 marks), SUM25 (Q5a, 03 marks & Q5a(OR), 03 marks)

Other Important Questions:

5. Give the Classification of canals based on alignment and network. (SUM24 - Q3j, 03 marks), (SUM25 - Q4b(OR), 04 marks)
6. What is canal lining? Write its requirement, types, advantages, and materials used. (SUM24 - Q3l, 03 marks), (SUM25 - Q5c, 07 marks)
7. Explain canal regime condition. Write in brief initial and final regime condition. (SUM24 - Q3k, 03 marks)
8. Write the requirement of a good outlet. List types of outlets and explain any one in detail with a sketch. (SUM24 - Q3l, 03 marks)
9. Differentiate between weir and barrage. (WIN24 - Q5a, 03 marks)
10. Draw a sketch and explain the terms: Cross Drainage Work, Aqueduct, Siphon Aqueduct, Super Passage, Level Crossing, Berm, Free Board. (WIN23 - Q5c(OR), 07 marks), (SUM25 - Q5b, 04 marks)
11. List out any four factors affecting canal alignment. (WIN23 - Q5b(OR), 04 marks)
12. Draw the cross-section of a fully in-cutting canal. (SUM24 - Q3l, 03 marks), (WIN23 - Q5c, 07 marks)

Unit VI: Evaluation of Irrigation Projects

Repeated Questions:

1. **Explain the process / main criteria for the evaluation of an irrigation project. (Often includes a case study request)**
    - Appeared in: WIN24 (Q1c, 07 marks & Q2c(OR), 07 marks), SUM25 (Q5c(OR), 07 marks)
2. **Enlist the methods of assessment of irrigation water and explain any one.**
    - Appeared in: WIN24 (Q3c, 07 marks), WIN24 (Q5c(OR), 07 marks), SUM25 (Q4b, 04 marks)

Other Important Questions:

3. Write a short note on "Assessment of irrigation water". (SUM24 - Q2c(OR), 07 marks)
4. Discuss various methods of assessment of irrigation water. (WIN24 - Q3c, 07 marks)

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