A **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: RA403

B.E. / B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Fourth Semester

Agricultural Engineering

R21UAG403 – SOIL AND WATER CONSERVATION ENGINEERING

(Regulation-R2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Large gullies and their network are called _____ CO1-U

   (a) detachment (b) rills (c) ravines (d) ditches

2. If the rain drop is doubled, then KE gets increase by ____ CO1-U

   (a)24 times (b) 10 times (c) 16 times (d) 2 times

3. In equation Q = CIA / 360 , I is in _____ CO1-U

   (a) mm/ hr (b) cm/ hr (c) cm/ sec (d) mm/ min

4. The removal of soil particles by direct impact of wind over soil clocks is called as CO1-U

   (a) saltation (b) Suspension (c) Efflusion (d) detrusion

5. The cross sectional area of graded bund should not be less than CO2-App

   (a) 1m² (b) 2.25 m² (c) 5 m² (d) 4 m²

6. The graded contour bunds are not recommended for construction on slope CO1-U

   (a) 2% (b) 5% (c) 8% (d) 10%

7. The size of micro catchment in contour bund system of water harvesting varies from CO1-U

   (a) 10-50m² (b) 30-60 m² (c) 10-20 m² (d) 60-90 m²

8. The ‘half-moon’ structure is used for CO1-U

   (a) sheet water harvesting (b) runoff harvesting

   (c) spring water harvesting (d) water spreading

9. In _____ stage, the vegetation begins to grow in the gullies CO1-U

(a) formation (b) Development (c) Healing (d) stabilization

10. The movement of saltation load is in the form of CO1-U

(a) rolling or sliding (b) bouncing (c) suspension (d) hopping

PART – B (5 x 2= 10 Marks)

11. Explain Drop inlet spillway. CO1-U

12. List out the Components of Runoff. CO1-U

13. Design parameter difference between Contour bund and Graded Bund. CO1-U

14. Explain important of Rain Water harvesting in future. CO1-U

15. What are the Sediment yield rate factors? CO1-U

PART – C (5 x 16= 80 Marks)

16. (a) How would you modify bund dimensions for a region with high rainfall and steep slopes to ensure durability and effectiveness? CO2-App (16)

Or

(b) How would you determine the most suitable gully control method (e.g., check dams, vegetative barriers, or contour bunds) for our region? CO2-App (16)

17. (a) Describe the stages and classification of gully & Temporary gully control structures? CO1-U (16)

Or

(b) Explain the typical range of CN values for forests, agricultural land, and urban areas , the factors affecting SCS Curve Number CO1-U (16)

18. (a) Vaigai River region with mixed soil types, how would you select materials for constructing a check dam to ensure its long-term stability? CO3-App (16)

Or

(b) A farmer in a hilly region, What soil conservation techniques would you recommends preventing the formation of these gullies? CO3-App (16)

19. (a) A community faces groundwater depletion. Which harvesting techniques would you implement to recharge aquifers? CO4-App (16)

Or

(b) A rural village area seasonal floods that cause damage to infrastructure and agriculture, Design a flood water harvesting system to benefit the community? CO4-App (16)

20.	(a)	In a construction site, how would you assess the effectiveness of a silt detention tank in controlling sediment runoff?	CO4-App	(16)
		Or		
	(b)	Apply the Rational Method to estimate peak runoff for a small urban watershed after a heavy rainfall?	CO4-App	(16)