



KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.) 2024 Admission
IV Semester Final Examination – July 2026

SWC 2206

Soil and Water Conservation Engineering (2+1)

Marks: 50
Time: 2 hours

I State True or False

(10x1=10)

1. Advanced pattern of rainfall causes the reduction in runoff peak.
2. Rill erosion is most serious than other forms where soil is highly erodible.
3. Contour bunds are mostly adopted in black cotton soil.
4. Narrow width bench terrace are orchard bench terrace.
5. The drop spillway conveys the runoff under the embankment with erosion.

Fill in the blanks

6. A pond constructed entirely by excavation without embankment is called a pond.
7. A small barrier constructed across a gully to reduce flow velocity is called a dam.
8. Shelter belts reduce wind speed up to a distance of abouttimes their height.
9. Dug-out ponds are more suitable in terrain.
10. Energy loss in hydraulic jump with increase in Froude number.

II Write short notes on ANY FIVE of the following

(5x2=10)

1. Diversion drains
2. Contour Trenching
3. Shelter belts
4. Importance of subsurface dykes.
5. Runoff plots
6. Principle of momentum in open channels.
7. Short-term and long-term runoff harvesting techniques

III Answer ANY FIVE of the following

(5x4=20)

1. What do you understand by *erosivity and erodibility*? Discuss one method of each to determine erosivity and erodibility.
2. Write a short note on sand dunes formation and stabilization methods.
3. Describe the measures to reduce surface wind velocity for wind erosion control.
4. Differentiate between the following pairs
 - a) Bench terrace and broad-base terrace
 - b) Loose rock dam and Bush Dam
 - c) Runoff plots and Soil samplers
 - d) Drag force and lift force in wind erosion
5. Explain design procedure for gully control structures.
6. Derive the equation for energy dissipation due to hydraulic jump.
7. Explain the design of farm pond capacity, embankment, and spillways.

IV

Write an essay on ANY ONE of the following

(1x10=10)

1.
 - a) Design a parabolic grassed waterway to carry the peak runoff rate as $6 \text{ m}^3/\text{s}$ on 1% bed slope. Manning's roughness n is 0.034 and permissible velocity is 1.5 m/s. Use the approximate relation i.e., depth of flow, $d = 1.5 R$ (R is hydraulic radius).
 - b) Derive an equation to determine the height of contour bunds. Make any assumptions that may be required.
2.
 - a) Explain the Universal Soil Loss Equation (USLE). Describe each factor affecting soil loss estimation.
 - b) Write notes on Modified Universal Soil Loss Equation (MUSLE)
