



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Agrl. Engg.) 2020 Admission
IV Semester Final Examination - August 2022

Lwre.2206

Soil and Water Conservation Engineering (2+1)

Marks: 50
Time: 2 hours

I

Define the following

1. Soil erosion
2. Sheet erosion
3. Erosivity
4. Puertorican or California bench terraces
5. Graded bunds
6. Sand dune

(10x1=10)

Fill in the blanks

7. The bunds which are constructed between two contour bunds so as to limit the horizontal spacing to the maximum required are called -----.
8. The most common nonrecording gauge for measuring the stage of flow is -----.
9. In wind erosion very fine particles of size less than 0.1 mm diameter are carried by wind in -----.
10. Ramser's formula for spacing of contour bunds in semi-arid climate with good infiltration soils is given as -----.

II

Write short notes on ANY FIVE of the following

(5x2=10)

1. Windbreaks and shelter belts
2. Main features and limitations of contour bunds
3. Active and inactive gullies
4. Permissible velocity of flow in vegetated waterways
5. Factors influencing water erosion
6. Types of terraces
7. Spacing of bunds

III

Answer ANY FIVE of the following

(5x4=20)

1. Calculate the annual soil loss from a watershed of 500 ha with Rainfall erosivity index as 1000tonnes/ha, soil erodibility index- 0.30, crop management factor-0.50, conservation practice factor-1.0, slope length factor -0.20.
2. Calculate the length of the rectangular weir used as surplusing arrangement for bunds with the following data. Catchment area=50 ha, HFL over the crest = 0.60 m, Intensity of rainfall for the duration equal to the time of concentration = 50mm/h, Runoff coefficient = 0.50.
3. Calculate the area of protection from a windbreak of 200 m in length and 15 m in height. The angle of deviation of the prevailing wind from perpendicular to the barrier is 30°. The actual wind velocity is 13.5 km/h at 15m height and the minimum wind velocity capable of moving the soil fraction is 15km/h at 15 m height.
4. Calculate the area lost per hectare due to contour bunding in a watershed of land slope of 5%, base width of bund= 1.5 m, horizontal interval = 30m.
5. What is strip cropping? Explain different types of strip cropping.

6. What are Geotextiles? Explain the application of geotextiles in soil conservation activities.
7. Explain the use of a multislot divisor in runoff and sediment measurement.

IV

Write an essay on ANY ONE of the following

(1x10=10)

1. Explain the process and stages of gully development. Explain the various temporary gully control structures.
2. Explain the various engineering measures of soil and water conservation. Comment on the suitability of these measures.
