KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.) 2023 & Previous Admissions
IV Semester Final Examination – June 2025

Lwre.2206 **Soil and Water Conservation Engineering (2+1)** **Marks: 50**
Time: 2 hours

I **Fill in the blanks** **(10x1=10)**

1. ..... erosion is a function of runoff rates, which depends both on rainfall intensity and on soil infiltration.
2. The practice that performing in the field operation such as ploughing, planting, cultivating and harvesting approximately on the contour is called .....
3. The size of Weishmere plot is ..... m long with standards slope 9 per cent.
4. The factor R of USLE is the function of ..... characteristics.
5. In design of grass waterways, the free board is added to .....

State true or False

6. The potential ability of land uses in a specified way or with same specified management practices is called capability.
7. The level terraces are called conservation terraces.
8. The contour cultivation is effective in reducing average annual runoff upto 90 per cent.
9. The process of soil erosion and soil loss are different.
10. Clayey soils are more easily detached at low moisture levels.

II **Write short notes on ANY FIVE of the following** **(5x2=10)**

1. Define Shelterbelt and enlist its advantages.
2. Write the stages of gully development.
3. What do you mean by Strip Cropping?
4. Calculate the vertical interval between the contour bund having land slope 5 per cent using Ramser formula for black cotton heavy soils.
5. What is mean soil erodibilty factor?
6. Write the application of USLE.
7. State the source of sediments.

III **Answer ANY FIVE of the following** **(5x4=20)**

1. Explain the methods for determining the erosivity.
2. Differentiate between contour and graded bunding.
3. State the MUSLE and discuss its different components.
4. Enlist the methods to control the wind erosion. Write in brief about windbreak and shelterbelt.
5. Write the classifications of gully
6. Calculate the annual soil loss from the field subject to soil erosion problem. For the following information
   (i) Rainfall erosivity index: 1000 m.tonnes/ha
   (ii) Soil erodibilty index = 0.20
   (iii) Crop management factor = 0.50
   (iv) Conservation practice factor = 1.0
   (v) Slope length factor = 0.1

   Also, explain how the soil loss is affected by adopting soil conservation practice.

7. Calculate the total length and earthwork of contour bund per hector, which is constructed on 5 per cent land slope. The bunds spacing was maintained as 25 m. The specification of the bund is given as under:
   (i) Top width = 50 cm
   (ii) Bottom width = 125 cm
   (iii) Height = 100 cm
   The lateral and side bunds are also formed in the field.

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1. Design a parabolic shaped grassed waterway to carry a flow of 3 cu. m/s down a slope of 4 %. An excellent stand of dub grass is to be maintained in the waterway ($\eta = 0.04$).
2. Design a 150 m long bench terrace for a land having an average slope of 20 per cent. The soil is clay loam. The terrace channel has a uniform grade of 0.5 per cent. Maximum intensity of rainfall expected during the 10 years recurrence interval is 10 cm/h.

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