



The Open University of Sri Lanka
Faculty of Engineering Technology

Final Examination- 2009/10

Technology (Agricultural Engineering) /Industrial Studies
(Agriculture)

AEX4232 Soil and Water Conservation

Date : 01/03/2010
Time : 0930-1230 hours

SECTION II - Answer four (04) questions only

- (1) (a) Write down each component of the **Universal Soil Loss equation**.
(b) Explain relationship between **kinetic energy** and component R of the equation.
(c) Calculate the soil loss for four (04) Ha catchment having the following characteristics.

Rainfall erosivity Index = 300
Soil erodibility factor = 0.5 t/ha/yr/R
Field slope = 4%
Length of slope = 300m
Conservation practice factor = 0.5
Crop management factor = 0.2

- (d) Calculate the soil loss for same catchment if the field slope increase up to 6%. Find out the increase of soil erosion due to this slope increase.
- (2) (a) Explain why good crop management practices can more effectively control erosion than mechanical means alone?
(b) Discuss the importance of controlling soil erosion and the constraints to implement soil conservation practices in Sri Lanka with suitable examples.
(c) Outline the benefits of having live mulch than straw or other dead materials.
- (3) (a) What are the main kinds of degradation in the world as identify by Food and Agriculture Organization (FAO)

- (b) Compare differences between water and wind erosion in terms of sediment transport.
 - (c) Discuss the main reasons for the high rates of soil erosion in some regions and low in others with examples.
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- (4) (a) What are the differences in gully erosion and pinnacle erosion? Briefly explain the nature and causes of gully erosion.
 - (b) Discuss "Soil erosion takes place in upland vegetable cultivated areas in Sri Lanka".
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- (5) (a) Define the following terms
 - 1) Erosivity
 - 2) Erodibility
 - (b) Briefly discuss the factors affecting erosivity.
 - (c) Describe why erosion of surface soil is so detrimental to the environment.
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- (6) Write short notes on the followings.
 - (a) Forest Encroachment
 - (b) Terraces for soil conservation in Sri Lanka.
 - (c) Median Volume Drop Diameter (D50).