



The Open University of Sri Lanka
 Faculty of Engineering Technology
 Industrial Studies and Technology Programmes

Final Examination- 2012/ 2013

AEX 4232/ Soil and Water Conservation

Date : 21/ 07/ 2013
Time : 0930 - 1230

SECTION 2: Answer any four (4) questions

1. (a) Briefly explain the effect of rainfall intensity on soil erosion.
 (b) Calculate the peak runoff rate that can occur once in 10 years from a catchment of 10 ha with the following characteristics using the rational method.
 Runoff coefficient = 0.4
 Time of concentration = 6 mins.
 Intensity of the rainstorm for 10 year return period = 100 mm / hr
2. Write short notes on any three (03) of the following.
 - (a) Brick weirs for soil conservation
 - (b) Rain splash erosion
 - (c) Mix cropping
 - (d) Sediment transport by streams
3. (a) Give five main policy areas contributing to sustainable soil management.
 (b) Why do we need a national water policy? Discuss.
4. (a) Briefly discuss on soil classification in Sri Lanka.
 (b) Calculate the soil loss by the Universal Soil Loss Equation for a 20 ha catchment. The following information for the catchment is available.
 Rainfall erosivity index (R) = 800
 Soil erodibility factor (K) = 0.25 t / ha / yr / R
 Slope length and steepness (LS) = 0.1
 Conservation Practice factor (P) = 0.6
 Crop management factor (C) = 0.5
5. (a) What are the soil erosion control measures adopted in plantation sector in Sri Lanka.

- (b) Write an essay on “Soil erosion problems associated with traditional farming in Sri Lanka”.
6. (a) Briefly explain the general design approach of an irrigation channel.
- (b) Workout the flow dimensions for a rectangular shaped channel whose flow velocity should not exceed 1.25 m/s. Channel needs to carry a flow of $2\text{m}^3/\text{s}$ and the bed gradient is 2%. Take Manning’s roughness coefficient as 0.03.