B.Sc in Export Agriculture
Faculty of Animal Science & Export Agriculture
Uva Wellassa University

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Year II Semester I
End Semester Examination - January 2009

Irrigation and Water Management (EAG 231-2)

Instructions
Answer all questions
No. of questions : Five (05)
No. of pages : Three (03)
Time : Two hours (02 hrs)
Total marks allocated : 40/100

1.

a. What are the most common methods used for soil moisture determination?
b. Explain the differences between direct and indirect methods of soil moisture determination.
c. Describe a simple laboratory method of field capacity determination.
d. An undisturbed soil sample was taken from a field by a core sampler for moisture determination. Internal diameter and height of the core sampler are 6cm and 8cm respectively. Weight of core sampler is 400g and weight of core sampler with soil was 780.15g. A wet soil sampale of 125g taken from core sampler was kept in the drying oven at 105^0C for 24hrs. The weight of dried soil sample was 111.6g.

Determine,

i. Volume of core sampler.
ii. Moisture percentage of the soil sample in dry basis.
iii. Bulk density of the soil.

2.

a. Define the following terms
   i. Irrigation
   ii. Infiltration
   iii. Deep percolation
   iv. Surface run off

b. Briefly explain the methods that are used to measure furrow infiltration procedure.

c. The data obtained from a test furrow in a sandy loam soil are given below.

Stream Size (L/min)	Distance (m)	Advanced Time (min)	Wetted Perimeter(cm)	Furrow cross sectional area (cm^3)
92	20	1.75	25.39	60
92	40	5.75	25.82	93
92	60	10.91	26.39	103
92	80	17.83	26.7	108.4
92	100	23.67	27.11	111.65
92	110	27.75	27.42	112.28

Determine the depth of infiltration using the given data

d. "Drip irrigation may save water by reducing the amount used by the crop". Comment on this.

3.

a. Briefly explain the methods of water application.

b. Discuss the factors that are considered in selecting an irrigation method.

c. Briefly explain the importance of irrigation scheduling.

d. A stream of 140L/s was diverted from a canal and 110L/s was delivered to the field. Area of 1.5ha was irrigated in 8 hrs. The depth of effective root zone was 1.6m. The runoff loss in the field was $430m^3$. The depth of water penetration varied linearly from 1.6m at the head end field to 1.2m at tail end. Available moisture holding capacity of the soil was 25cm/m depth of soil. Irrigation was started at 50% depletion of available moisture. Determine,
   i. Water conveyance efficiency
   ii. Water application efficiency
   iii. Water storage efficiency
   iv. Water distribution efficiency

4. Describe the advantages of watershed approach for planning and management.
5. Explain the watershed components and three major managing components in a watershed.