

Kerala Agricultural University
ONE TIME SPECIAL EXAMINATION
BSc (Ag) Final Examination
2004 Admission

Agro. 1203 - Irrigation and water management (1+1)

Marks: 60

Duration: 2 hour & 30 minutes

I. Fill in the blanks

(20x0.5=10)

1. Soil moisture tension at field capacity is -----bar
2. Example for an indicator plant for soil moisture deficit
3. 1 m^3 of water = -----L of water
4. One atmosphere is equal to -----bar
5. Water present between field capacity and permanent wilting point is.....
6. The water present in the soil that moves in response to gravity is called -----
7. The lateral movement of water in the soil is known as -----
8. ----- are medium textured soils having almost equal amounts of clay, silt, and sand particles
9. ----- is the process of entry of water into the soil
10. ----- and ----- are two integral components of water management
11. The ratio between the water stored in root zone of a crop to the water delivered at the field is called.....
12. Drains are designed to lower and maintain the ground water below the ----- (water table, root zone, soil surface, A-horizon)
13. Agricultural drainage removes excess water known as ----- (capillary water, free water, hygroscopic water, ground water)
14. A typical plant absorbs ----- % from the first 25 percent of the effective root zone depth
15. Name the most widely used empirical formula for estimating reference crop evapo transpiration -----
16. According to BIS, the EC of low saline water should be below-----
17. Water with SAR more than ----- (10, 20, 40,60) is not good for rrigation
18. How much time a water flow of 10L/s will take to apply irrigation of 60mm over an area of 1 ha (900minutes, 1000 minutes, 1200 minutes, 600 minutes)
19. fitted at regular intervals on the laterals of drip lines allow the outflow of water at slow rate to plants (drippers, control head, main lines, laterals)
20. A micro irrigation device/ method developed by Agronomic Research Station of KAU

II. Answer all questions (14x1=14)

1. Porosity of top cultivated soils is high. Why?
2. Define drainage coefficient
3. List out the various types of sub surface drains
4. The first irrigation to dwarf wheat should not be delayed beyond 20-25 days after sowing. Why?
5. Normally, sprinkler irrigation is not recommended for rice. Why?
6. Water balance accounting method for scheduling irrigation is also called checkbook method or book keeping method. Why?
7. Check basin cannot be used for irrigating root and tuber crops. Why ?
8. Tensiometers are generally used for scheduling irrigation in light soils – Why?
9. What is surge irrigation?
10. What do you mean by virtual water?
11. What is OPAW or optimum percentage of available water?
12. What is meant by scheduling of irrigation?
13. What do you mean by duty of irrigation water ?
14. Define hydrological cycle

III. Answer any 8 (8x2=16)

1. Why reference crop ET is accepted as an improvement over potential ET
2. What do you mean by soil moisture deficit?
3. Distinguish between water requirement and irrigation requirement.
4. Distinguish between bulk density and particle density
5. Distinguish between: crop coefficient and crop factor
6. What is leaching requirement?
7. What is effective rainfall?
8. List out the quality parameters of irrigation water
9. What is Darcy's Law ?
10. Fine textured soils hold more water than coarse textured soil. Why?

IV. Essay (Any 4) (5X4 =20)

1. What do you mean critical stages? Mention the critical stages of rice. Explain the water management practices for rice.
2. What is irrigation scheduling? What are the different approaches for scheduling irrigation?
3. Discuss in brief how you can estimate irrigation depth from soil moisture characteristics and rooting depth.
4. Explain how water productivity differs from water use efficiency. What are the different forms of water productivity?
5. Explain how water moves along soil-plant-atmosphere- continuum
6. Elaborate empirical methods of finding ET
7. What are soil moisture constants? Discuss their importance with respect to irrigation scheduling to crops