

B.Sc. (Honours) Agriculture Semester-IV Examination, 2019**Course No: AGR-224 (Water Management)**

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____

Student Index No. _____ Regn. No. _____ of _____

Time : Two Hours**Full marks : 50**

Questions are of value as indicated in the margin

Part - I
(Objective and Short Answer Type)
(Use only ball point pen)**Time : 30 minutes****Full marks : 20****Note:** 1. Answer in question paper itself.

2. Striking, rewriting or overwriting are not allowed in the objective type questions.

1. State True (T) or False (F) in respect the following statements :**0.5×10=5.0**

- a) Pegging is a critical stage of irrigation in groundnut ☐
- b) Bulk density of a soil increases with porosity ☐
- c) Irrigation with high sodium containing water reduces uptake of water in plants ☐
- d) Higher value of IW/CPE ratio indicates more number of irrigation to crop ☐
- e) On complete saturation, clay soil attains field capacity quicker than sandy soil ☐
- f) Plants normally die at wilting coefficient ☐
- g) Tensiometer works well up to 0.85 bar moisture tension ☐
- h) Harringbone is an open drainage system ☐
- i) Plant growth is the maximum when soil water is near to one-third bar ☐
- j) Sprinkler irrigation is suitable for undulating topography ☐
- k) Soil moisture tension is directly proportional to matric potential ☐
- l) Capillary rise of water is highest in clay soil ☐

2. Tick (✓) the correct alternatives (any ten):**0.5×10=5.0**

- a) Available soil moisture content at field capacity is i) 25 ii) 70 iii) 75 iv) 100%
- b) An indicator plant for irrigation scheduling is i) maize ii) blackgram iii) sunflower iv) mustard
- c) Orchard crops are most suitable under i) sprinkler ii) border strip iii) drip iv) flood irrigation system
- d) A crop which can tolerate high level of salinity is i) maize ii) rice iii) potato iv) barley
- e) In ideal soil condition, the air : water content should be i) 1:2 ii) 2:1 iii) 1:1 iv) 1.3 ratio
- f) 'pF' unit is used to measure i) soil moisture content ii) moisture tension iii) capillary rise iv) percolation
- g) Mass wetness of a soil 12% and BD-1.5g/cc, the volume wetness will be i) 18 ii) 20 iii) 25 iv) 30cc
- h) Furrow irrigation can effectively be practiced in i) wheat ii) rice iii) maize iv) mustard

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- i) 300-400 cm is the water requirement in i) wheat ii) potato iii) boro rice iv) sugarcane
- j) Most common surface irrigation in India is i) check basin ii) border strip iii) furrow iv) surge method
- k) Capillary water in soil exists between i) 0.3-15 ii) 0.3-31 iii) 0.3-45 iv) 0.3-60 bar tension
- l) The concept of PET is given by i) Penman ii) Thornthwaite iii) Donald iv) Dastane

3. **Write short notes (any five) :**

2×5=10

a) Water use efficiency

b) Effective Rainfall

c) Poiseuille's law

d) Benefits of drainage

e) Water logged tolerance cultivars of rice and maize

f) Hydraulic head and gradient

g) Critical growth stages of sugarcane for irrigation

B.Sc. (Honours) Agriculture Examination, 2019

Semester-IV

Course No: AGR-224

(Water Management)

Part - II

(Descriptive Type)

Time : 90 Minutes

Full marks : 30

Questions are of value as indicated in the margin

Answer *any four* questions

4. Define soil moisture tension. Write down the components of soil moisture potential. Discuss the physical and biological classification of soil water. Mention different soil moisture constants. 1+1+4+1.5=7.5
 5. What is excess water? Mention the factors responsible for developing excess water. Write down the advantages and disadvantages of drip irrigation. 1+3+3.5=7.5
 6. What do you mean by passive absorption? How does it take place in soil-plant atmosphere systems? Mention the factors affecting the water absorption in plant. 1+4+2.5=7.5
 7. What do you mean by quality of irrigation water? Classify irrigation water based on salinity and sodicity hazards. Write the reclamation measures for growing crops with poor quality saline water. 1+3+3.5=7.5
 8. Answer the following :
 - a) Water requirement of maize with special references to irrigation scheduling based on critical growth stages, IW/CPE ratio and DASM
 - b) Irrigation scheduling in wheat depending on water availability.
 - c) State the irrigation scheduling based on soil approach. 2.5+2.5+2.5=7.5
 9. Write short notes on the following (**any three**) : 2.5×3=7.5
 - i) Soil moisture characteristics curve
 - ii) Border method of irrigation
 - iii) Distribution efficiency
 - iv) Mole drain
 - v) Crop water requirement
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