

B.Sc. (Ag.) Honours Semester-II Examination, 2017
Course No: AGR-121 (Water Management including
Micro-Irrigation)

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____
Student Index No. _____ Regn. No. _____ of _____

Time : Two Hours

Full marks : 40

Questions are of value as indicated in the margin

Part - I
(Objective and Short Answer Type)
(Use only ball point pen)

Time : 20 minutes

Full marks : 10

- 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 (any ten):** 0.5×10=5.0

- (a) Bulk density of a soil increases with porosity. ☐
- (b) Capillary water in soil exists between 0.3 to 15 bar tension. ☐
- (c) Herringbone is an open drainage system. ☐
- (d) Plant roots uptake water mainly by active absorption. ☐
- (e) Leaching is recommended for reclamation in root zone salinity. ☐
- (f) Major source of irrigation water in India is surface water. ☐
- (g) Tasseling in maize is a critical stage for irrigation. ☐
- (h) Tensiometer measures soil moisture content directly. ☐
- (i) On complete saturation, clayey soil attains field capacity quicker than sandy soil. ☐
- (j) PMA is an example of reflecting type of anti-transpirant. ☐
- (k) Flood irrigation is normally practiced for SRI cultivation. ☐
- (l) BBF method of planting harvests rain water. ☐

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

- (a) Available soil moisture content at field capacity is
(i) 10% (ii) 20% (iii) 50% (iv) 100%
- (b) The most common method of surface irrigation is
(i) check basin (ii) drip (iii) sprinkler (iv) surge irrigation
- (c) The concept of PET is given by (i) Penman (ii) Thornthwaite (iii) Donalad (iv) Arnon

- (d) 'pF' unit is used to measure soil (i) moisture content (ii) moisture tension (iii) drainage (iv) capillary rise
- (e) Capillary rise of water is normally maximum in (i) sandy soil (ii) loam soil (iii) clay soil (iv) none
- (f) (i) Double main-drain (ii) mole drain (iii) intercepting drain (iv) parallel drain is an untitled sub-surface drain
- (g) The area from where water is harvested is called (i) command area (ii) catchment area (iii) drainage area (iv) watershed
- (h) (i) Rice (ii) chickpea (iii) sunflower (iv) sugarcane is grown as indicator plant for scheduling of irrigation
- (i) The soil moisture tension at ultimate wilting coefficient is (i) 15 (ii) 30 (iii) 45 (iv) 60 bar
- (j) The grain yield of wheat crop is 3.6 tonnes / ha and water requirement is 40 cm the crop WUE will be (i) 6 kg/ha–mm (ii) 9kg/ha–mm (iii) 12kg/ha–mm (iv) 15 kg/ha–mm
- (k) A crop which can tolerate high level of salinity is (i) maize (ii) rice (iii) potato (iv) barley
- (l) The most appropriate example for bio-drainage plant is (i) mango (ii) guava (iii) acacia (iv) ber

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Course No: AGR-121

(Water Management Including Micro-Irrigation)

Part - II
(Descriptive Type)

Time : 100 Minutes

Full marks : 30

Questions are of value as indicated in the margin

Answer *any four* questions from the following.

3. Discuss the different types of irrigation efficiencies and suggest measures for their improvement. What do you mean by water productivity? (4+2)+1.5=7.5
 4. What are the forces causing retention of water in soil? Discuss the physical and biological classification of the soil water. Write the different soil moisture constants. 1+4+2.5=7.5
 5. Discuss the different methods of surface irrigation with suitable crops. Write down the advantages and disadvantages of drip irrigation. Mention the suitability of sprinkler irrigation. 3.5+3+1=7.5
 6. What is crop water requirement? Write down the factors influencing water requirement of crop. Discuss about the various techniques of moisture conservation. 1.5+3+3=7.5
 7. Answer the followings :
 - (a) Water requirement of sugarcane with special references to irrigation scheduling based on critical growth stages, IW/CPE ratio and DASM.
 - (b) Water requirement of wheat under irrigation water availability
 - (c) Water management in potato based on critical stages of growth. 3+2.5+2=7.5
 8. Write short notes on the following (**any three**): 2.5×3=7.5
 - (a) Factors affecting method of irrigation.
 - (b) Salinity and sodium hazard of irrigation water
 - (c) Anti-transpirant
 - (d) Soil moisture characteristic curve
 - (e) Mole drain
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