Answer all Questions

Time: Two hours

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01. What are the parameters considered during the testing of irrigation water quality? And give the instruments used to measure those parameters.   (20 marks)

02. Write the procedure to determine the following parameters in irrigation water.
   a. Total suspended solids (TSS).   (20 marks)
   b. Carbonate and bicarbonate.   (20 marks)

03. Give the indicators and chemicals needed to measure the hardness of water.(10 marks)

04. Briefly explain the factors to be considered during the collection of water samples from various water sources for the purpose of water quality analysis.   (20 marks)

05. Briefly explain about the needs for water quality testing.   (20 marks)

06. What are the advantages and disadvantages of field water testing?   (20 marks)

07. An irrigation water contains 414, 120 and 24 mg/l of sodium, calcium and magnesium ions respectively. Calculate,
   i. Total cation concentration in meq/l
   ii. SAR
   iii. Approximate EC value in mS/m
   iv. Osmotic pressure of the irrigation water containing such soluble cations
   v. Total dissolved salts in mg/l   (40 marks)

08. An irrgation water having the sodium (Na^+), calcium (Ca^{2+}) and magnesium (Mg) concentrations as 1.5, 2.0 and 1.0 meq/l respectively. Calculate, Soluble Sod Percentage (SSP), Sodium Adsorption Ratio (SAR) of irrigation water. Give comme on the use of that water for irrigation.

(20 marks)

09. An irrigation water having EC value of 450 mS/m contains calcium and magnesium as 2.0 and 1.0 meq/l respectively. Calculate the following and give the comments on the irrigation water.

(i) Concentration of Na ion in meq/l
(ii) SSP of the irrigation water
(iii) SAR of the irrigation water

(3 x 10 = 30 marks)

10. (a) Why COD value of a particular water sample is always greater than BOD values?
(b) 'Excessive nutrients reduce yield' justify this statement.
(c) 'Specific uses have different quality needs'. Explain this statement.

(3 x 10 = 30 marks)