

ACH 2101 : SOIL PROPERTIES (3:30/30)

Answer all questions

Time : 2 Hours

1. (a) Write the Stoke's law and its assumptions.
(b) A particle having the diameter of $6\mu\text{m}$ falling in a liquid having the density of 1g/cm^3 and viscosity of 0.01 poise. Assume the particle density is 2.65g/cm^3 and the gravitational acceleration is 980 cm/s^2 . Calculate the followings:
 - (i) Settling velocity of the particle.
 - (ii) Time taken to travel a distance of 10cm in the liquid.

2. (a) Briefly explain the significance of soil pH on nutrient availability in soils.
(b) Briefly explain the importance of Cation Exchange Capacity on soil fertility.
(c) If the Base Saturation of a soil is 58% and its Cation Exchange Capacity is 23 meq/100g, calculate the exchangeable acidity of the soil.

3. (a) "Smectite exhibits a high plasticity, cohesion and swelling on wetting and shrinking on drying"- Comment on this statement.
(b) Briefly explain how the charges are developed in the organic soil colloids.

4. Discuss the role of soil physical properties in maintaining the fertility of soils.
