



Programme: M. Sc. (Ag) Agronomy
Subject: Soil Physics
Subject Code: 13A.SS.511
Enrollment No: _____

Full Marks: 50
Time: 2 Hrs.

Section I

1. **Short Answer type questions. Answer any four.** **4 x 5 = 20**
- Compare mass flow and diffusion. Explain management of soil aeration.
 - Differentiate between bouyoucos hydrometer and international pipette methods.
 - Define soil texture. Differentiate between soil texture and structure.
 - Compare between available and unavailable soil water. State the formula to calculate available water content of soil layers and soil profile through applying proper method.
 - Define soil temperature. State heat balance equation in soil. Discuss means of managing soil temperature process.
 - Discuss concepts related to water availability to plant between field capacity and permanent wilting point.

Section II

- Long Answer type questions. Answer any two.** **2 x 15 = 30**
- Define Stokes's law. Calculate the velocity of falling soil particle with radius 0.01m in aqueous suspension at 25⁰C (Density of the liquid=0.997g/cc, particle density of soil= 2.65 g/cc and $\eta=0.01$ poise) through applying proper method. 10
 - Tabulate soil separates based on their size (as per ISSS and USDA classification). 5
 - Explain puddling. Discuss its influence on physical properties of soil. 10
 - Illustrate the dynamic properties of soil. 5
 - Describe plasticity indices. Distinguish between upper and lower plastic limits based on your knowledge. 10
 - Explain soil crusting and its mechanism. 5
 - Evaluate influence of soil temperature on crop production. Describe factors influencing soil temperature along with management practices. 10
 - Define soil aeration. Describe composition of soil air with their importance. 5
