



KERALA AGRICULTURAL UNIVERSITY
B.Sc. (Hons.) Ag. 2017 Admission.
I Semester Final Examination-February-2018

Ssac.1102

Fundamentals of Soil Science (2+1)

Marks:50
Time: 2 hours
(10x1=10)

I Define the following

- 1 Hydraulic conductivity
- 2 Sesquioxide ratio
- 3 Buffering capacity
- 4 Pedon
- 5 Soil Chemistry

Fill in the blanks

- 6 The 12th Order included to the soil taxonomy is
- 7 The number of soil textural classes listed by ISSS in the textural triangle is.....
- 8 The material transported and deposited by wind is called.....
- 9 Podzolization occurs in climatic conditions
- 10 Isomorphous substitution of Si⁴⁺ by Al³⁺ in the tetrahedral sheet gives rise.....charges

II Write Short notes on ANY FIVE of the following (5x2=10)

- 1 Write the principle of determination of soil organic matter Walkley Black's method.
- 2 Write differences between dispersion and flocculation of soil colloids
- 3 Define Darcy's law. Write the equation and indicate the terms used
- 4 Write the principle of gravimetric method of soil moisture estimations
- 5 Draw a neat diagram of a soil profile and indicate important master horizons and its silent feature
- 6 Write differences between pH dependent and pH independent charges
- 7 Classify rocks based on their formation

III Answer ANY FIVE of the following (5x4=20)

- 1 What is ion exchange ? Explain ion exchange phenomena using equations with monovalent and divalent cations
- 2 Write Stokes' equation. Write the assumptions made along with corresponding limitations for the equation.
- 3 What is soil acidity? Write their constraints and management practices adopted to overcome them.
- 4 Write differences between podzolization and laterization soil forming processes
- 5 Define different soil moisture constants.
- 6 What is BD? Write briefly on the management practices adopted to enhance productivity.
- 7 What is Base saturation %? Briefly explain how BS % varies with climate and soil pH.

IV Write an essay on ANY ONE of the following (1x10=10)

- 1 What is CEC? Explain the sources of different charges responsible for CEC. Write its importance in terms of soil fertility and buffering capacity.
- 2 What is soil organic matter and write its importance. Write briefly on the important fractions in terms of extraction, chemical composition/ properties.
