

M. Sc. (Ag.) Examination, 2016
Semester I
Soil Science and Agricultural Chemistry
Course No: SSC- 503
(Soil Chemistry)

Time: Three hours

Full Marks: 50

Questions are of value as indicated in the margin

Answer any **five** questions

1. a) Briefly discuss the properties of crystalline allumino-silicate colloids with respect to shape, hydration and nature of charge. Explain the causes of dispersion and flocculation of clay suspension. (3+3)+4=10
b) Describe the structure of diffuse double layer.
2. a) Briefly describe the characteristics of saline soil and alkali soil. 4+(3+3)=10
b) Discuss in details the chemical and cultural method of reclamation of both of them separately.
3. a) What do you mean by soil acidity? 1+5+4=10
b) Discuss the role of fertilizers, soil organic matter, parent material and excess rainfall in causing soil acidity.
c) How can acid soils be reclaimed and managed?
4. a) Describe in details the role of aluminium in acid soil formation. 5+5=10
b) Excess exchangeable sodium in alkali soil affects physical and chemical properties of soil as well as plant growth - justify.
- 5 Write down the changes in nutrient availability in soils after submergence. 10
6. Differentiate between: (any **four**) 2.5X4=10
 - a) Active acidity and potential acidity
 - b) ESP and SAR
 - c) Sodic soil and saline sodic soil
 - d) Kerr equation and Gapon equation
 - e) Calcium carbonate equivalent and gypsum equivalent
 - f) Salinization and alkalization
7. Write short note on: (any **four**) 2.5X4=10
 - a) Acid sulphate soil
 - b) Leaching requirement
 - c) Lime potential
 - d) Anion exchange in soil
 - e) Ratio law
 - f) Langmuir Adsorption Isotherm

