B.Sc. (Honours) Agriculture Semester-IV Examination, 2019

Course No: SSC-221[New] (Problematic Soils and their Management)

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____

Student Index No. _____ Regn. No. _____ of _____

Time : Two Hours **Full marks : 50**

Questions are of value as indicated in the margin

Part - I
(Objective and Short Answer Type)
(Use only ball point pen)

Time : 30 minutes **Full marks : 20**

Note: 1. Answer in question paper itself.
2. Striking, rewriting or overwriting are not allowed in the objective type questions.

1. **State True (T) or False (F) in respect the following statements (any ten):** 0.5×10=5

i) A solution with an H^+ ion activity of 0.001 M nill have a pH of 3.0. ☐
ii) The more dilute solution, the higher the pH value. ☐
iii) Out of 157 million ha of cultivated land in India 49 million ha are acidic. ☐
iv) Saline soils are also called white alkali soils. ☐
v) Salt index is +ve for irrigation water of high quality. ☐
vi) Acid sulphate soils contain a sulphuric horizon which has a pH > 4.5 ☐
vii) The relative strength of chelation is generally cu > Ni > Zn >Mn ☐
viii) The most important long lived radio isotope in soils are Sr^{90}, Ce^{137} ☐
ix) Land capability classification scheme developed by USDA. ☐
x) A veichle used to carry the sensor is called plantform. ☐
xi) Magnitude of active acidity is less than residual acidity. ☐
xii) Rice is salt sensitive crops. ☐

2. **Tick (✓) the correct alternatives (any ten):** 0.5×10=5.0

i) Cultural operations in general tend to a) increase b) decrease c) either a) and b) d) sustain soil acidity
ii) Buffering capacity of soil increased with increasing a) CEC b) AEC c) ZPC d) ZPNC
iii) Saline alkali soil is having a EC a) $4dsm^{-1}$ b) $=4\ dsm^{-1}$ c) $<4dsm^{-1}$ d) none of these
iv) Irrigation water with high quality have adj SAR value a) <3 b) 3-9 c) >9 d) none of these
v) Land capability class IV represents a) very good land b) Fairly good law c) moderately good land d) suitable for wild life.
vi) Different forms of Electromagenetic energy are a) Visible and UV b) infared and heat c) rado and Xrays d) all of the above
vii) Acid soils in India cover around a) 25 Mha b) 24 Mha c) 7 Mha d) 49 Mha

P.T.O.

ix) Which one is important GIS package a) ARC/INFO b) ISRO4IS c) IDRISI d) All of these

x) Any object which emits some radiation is having temperature a) 0^0K b) 273^0K c) 100^0C d) None of these

xi) Alkali soil is usually found in a) arid and semi and climate b) tropical and subtropical climate c) humid and subhumid climate d) All of the above

xii) Leaching requirement of saline soil is equal to
a) Diw/D_{dw} b) EC iw/EC_{dw} c) EC_{dw}/Ec_{iw} d) all of the above
c) 1000C d) none of these

3. **Write short notes (any five) :** 2×5=10

i) Acid sulphate soil

ii) Multipurpose tree

iii) Land capability classification

iv) Saline alkali soil

v) Compacted soil

vi) Gypsum requirement

vii) Eutrofication

B.Sc. (Honours) Agriculture Examination, 2019

Semester-IV

Course No: SSC-221 [New]

(Problematic Soil and their Management)

Part - II

(Descriptive Type)

Time : 90 Minutes **Full marks : 30**

Questions are of value as indicated in the margin

Answer *any three* questions

4. Differentiate between the following : 2.5×4=10
   i) Saline and Alkali soil ii) Active acidity and reserve acidity
   iii) Passive and active remote sensing iv) Contaminant and pollutant
   v) Soil quality and soil health vi) Salinity tolerant and alkali tolerant crops
5. Differentiate between SAR and RSC. How saline water can be utilized in agriculture? Write down the problems of soil acidity on plant growth. 2+4+4=10
6. What are the different problematic soils? What are the causes of formation of acid soil? Write down the management practices for reclamation of acid soil. 2+5+3=10
7. How alkali soil is formed? Write down the problems of soil alkalinity on plant growth. Discuss the reclamation and management practices of alkali soil. 2+2+6=10
8. What are the causes of soil pollution? Discuss in point about the chemical pollution of soil. 4+6=10
9. Discuss the different criteria of irrigation water quality along with their ratings. 10
