B.Sc. (Honours) Agriculture Semester-I Examination, 2018

Course No: SSC-111

(Fundamentals of Soil Science)

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. **Fill in the blanks with most appropriate words:** 1×5=5

a) The upper limit of size (diameter) of clay is _____.

b) The highest category in the soil taxonomy is _____.

c) _____ colour chart is generally used for determination of soil colour.

d) The most soluble fraction of humic substance is _____.

e) The matric potential corresponding to wilting point is _____ bar.

2. **Tick (√) the correct alternative**: 1×5=5

a) pH dependent charge is prevalent in
   i) montmorillonite iii) chlorite
   ii) illite iv) kaolinite

b) Sandstone and lime stone are
   i) metamorphic rocks iii) primary rocks
   ii) sedimentary rocks iv) igneous rocks

c) i) Parent material iii) Time
   ii) Relief iv) Climate
   is an active soil forming factor.

d) The most desirable type of soil structure for crops is
   i) spheroidal iii) block like
   ii) prism like iv) plate like

e) Which is/are the chemical weathering process?
   i) carbonation iii) hydration
   ii) hydrolysis iv) all of these

P.T.O.

3. Answer the following (***any five***): 2×5=10

a) Write in brief the factors affective organic matter decomposition.

d) Define primary and secondary minerals.

c) Name various chemical weathering processes.

d) What do you understand by mechanical analysis?

e) Define humus.

f) Name different soil orders.

g) Name different components of soil water potential.

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Part - II
(Descriptive Type)

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

Questions are of value as indicated in the margin.

Answer *any three* questions.

4. Although sandy soils are heavier in weight per unit volume than clay soils, the sandy soils are called light soil and clay soils are called heavy soil. Why? State different management practices for maintenance of good soil structure. What do you understand by soil crust? How can soil crust formation be controlled? 2+4+2+2=10

5. What do you understand by air capacity of soil? State the factors influence composition of soil air. How does soil temperature influences plant growth? 2+5+3=10

6. Draw and describe the structure of a 1:1 type clay mineral. Why is fine grain mica non expanding? 8+2=10

7. Write differences between the following (***any five***): 2×5=10
   a) Epipedous and endopedous
   b) Particle density and bulk density
   c) Podzolization and laterization
   d) Diocta-hedral and tri octa hedral sheet
   e) Soil acidity and alkalinity
   f) Heterotrophs and autotrophs micro-organism
   g) Denitrification and Nitrification

8. Write short notes on the following (***any five***): 2×5=10
   a) Ion exchange
   b) Igneous rocks
   c) Soil temperature regime
   d) Soil consistency
   e) Darcy's law
   d) C : N Ratio
   f) Role of soils Microbes in soil fertility

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