

- (f) Discuss different types of soil pollution with its prevention and mitigation.
- (g) Discuss regarding the soil structure and describe different types of soil structure.
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2018

Time : 2 hours

Full Marks : 50

Answer all questions

*The figures in the right-hand margin indicate marks*

*Candidates are required to answer in their own words*

*as far as practicable*

Maintain the sequence of answers as per the questions

**( FUNDAMENTALS OF SOIL SCIENCE )**

1. Choose the *correct* answer from the multiple choices : 1 × 10
- (i) Weathering of rocks and minerals, factors and processes of soil formation, and classification of soils in a recognized system is termed as
- (a) Soil technology

- (b) Soil survey
  - (c) Soil genesis
  - (d) Soil mineralogy
- (ii) The envelop of air that covers both lithosphere and hydrosphere is called
- (a) Atmosphere
  - (b) Technosphere
  - (c) Aurorasphere
  - (d) None of (a), (b), (c)
- (iii) The complex hot solution of silicates containing water vapour and gases having a temperature ranging from 700-1400 °C and originating at great depths in the earth crust is known as
- (a) Petrology
  - (b) Magma
  - (c) Ultramafic
  - (d) Metamorphism

- (iv) The kind of deposition in which coarser particles settle first and the finer particles later is known as
- (a) Uneven bedding
  - (b) Soft bedding
  - (c) Narrow bedding
  - (d) Graded bedding
- (v) The vertical section of the soil showing the various layers from the surface to the unaffected parent material is known as
- (a) Soil profile
  - (b) Soil weathering
  - (c) Soil regolith
  - (d) Soil disequilibrium
- (vi) The relative proportion of particles of various sizes such as sand, silt and clay is known as
- (a) Soil separates

- (b) Mechanical fractions  
 (c) Textural fraction  
 (d) All of (a), (b), (c)
- (vii) Clay particles belonging to a group of mineral known as aluminosilicates and are grouped under  
 (a) Primary minerals  
 (b) Secondary minerals  
 (c) Tertiary minerals  
 (d) Quaternary minerals
- (viii) The ability of soil to stick to itself or to other objects and resist deformation is known as  
 (a) Soil linear extensibility  
 (b) Soil crusting  
 (c) Soil consistency  
 (d) Soil plasticity

- (ix) The number of soil order in the 7th approximation is  
 (a) 11  
 (b) 10  
 (c) 13  
 (d) 12
- (x) The cyclic process in which water moves from the earth's surface to the atmosphere and back to the earth is termed as the  
 (a) Nutrient cycle  
 (b) Hydrological cycle  
 (c) Nutrient uptake cycle  
 (d) Atmospheric cycle
2. Write True or False in the space provided for following statement :  $\frac{1}{2} \times 10$
- (i) Montmorillonite is a nonexpanding clay mineral.
- (ii) Pedology deals with the formation, morphology and classification of soils.

- (iii) Feldspar is a primary mineral.
  - (iv) Solid surface and interior of the earth comes under Lithosphere.
  - (v) Hue, value and chroma are the component of soil air.
  - (vi) Soil air and water comprises about 50 per cent of the total volume of soil.
  - (vii) Higher is the pH value; higher would be the active  $H^+$  concentration.
  - (viii) The soil texture can easily be altered by management practices.
  - (ix) C:N ratio of arable soil is around 10:1.
  - (x) The water held between field capacity and permanent wilting point is available to plants.
3. Write short notes/explains on any *four* questions :  $2\frac{1}{2} \times 4$
- (a) Soil structure and its importance

- (b) Laterization process
  - (c) The three components of soil colour
  - (d) Soil consistency in three moisture states
  - (e) Passive soil forming factors
  - (f) Classification of sedimentary rocks on the basis of origin.
4. Answer the following questions (any *five*) :  $5 \times 5$
- (a) Discuss Stokes Law with its derivation and the assumptions associated with it.
  - (b) What is soil formation ? Discuss factors of soil formation.
  - (c) Discuss the soil moisture constants and biological classification of water.
  - (d) Briefly discuss the soil crusting, its evaluation and management.
  - (e) Illustrate the various types of weathering and discuss in details the chemical weathering.