



Time: 2 hrs

GIET UNIVERSITY, GUNUPUR – 765022
B. Sc. (Ag.) (First Semester) Examinations, January – 2024
AC-111 – Fundamentals of Soil Science

Maximum : 50 Marks

The figures in the right hand margin indicate marks.

PART – A

Q.1. Fill in the blanks with suitable word / figure.

(0.5 x 10 = 5 Marks)

- Stability index of minerals is given by _____
- Solum consist of _____ + _____ horizon.
- Viscosity unit is _____
- _____ having highest number of population among soil organisms.
- Father of soil Science _____
- Swelling and Shrinkage properties is seed in _____ type of soil
- Most important process of chemical weathering is _____
- Furrow slice soil having depth of _____ cm.
- Best soil structure for agricultural production is _____
- The unit of Cation Exchange Capacity (CEC) of soils is _____

Q. 2. Define (or) Explain the following in one or two sentences.

(1 x 5 = 5 Marks)

- Oxygen diffusion rate
- Soil consistency
- 1:1 type clay mineral
- Soil humus
- Cation Exchange Capacity (CEC) of soils

Q3. Match the following

(0.5 x 10 = 5 Marks)

Column – A		Column – B	
(a)	Chlorite	(i)	Metamorphic rock
(b)	Hue	(ii)	Chemical weathering
(c)	Humic acid	(iii)	Always negative
(d)	Marble	(iv)	Kaolinite
(e)	Nitrification	(v)	2:1:1 type minerals
(f)	Clay	(vi)	Dominant spectral colour
(g)	Carbonation	(vii)	Soluble in alkali
(h)	Active factors	(viii)	NH ₄ NO ₃
(i)	Matric potential	(ix)	<0.002mm
(j)	AEC	(x)	Jenny

Q4. Write True or False against each statement**(0.5 x 10 = 5 Marks)**

- a. In case of CEC, the replacing power increases in the following order: $\text{Na} < \text{K} < \text{NH}_4 < \text{Mg} < \text{Ca} < \text{H}$ normal soil.
- b. An organism capable of deriving energy for life processes only from the decomposition of organic compounds called as autotrophs.
- c. Particle density is also known as true density of soil
- d. Fungi has highest biomass among various soil organisms.
- e. The biological conversion of organic forms of C, N, P and S to inorganic or mineral forms is called mineralization.
- f. Modern conservation tillage practices contribute to maintaining high levels of organic matter in soils.
- g. is the measure of the soil's ability to permit water to flow through its pores or voids.
- h. The L horizon includes both organic and mineral limnic materials deposited in water and is commonly found in Histosols.
- i. Hygroscopic water primarily exists in a liquid state and is easily absorbed by plant roots.
- j. The fraction of incidental radiation that is reflected by land surface is termed as albedo.

PART – B**Attempt ANY FIVE questions. All question carries equal marks****(6 x 5 = 30 Marks)**

- 5. Define sedimentary rocks with 2 examples. Write down the classification of igneous rock.
- 6. Write down the component of soil. Describe various stages of physical weathering.
- 7. Write classification of silicate minerals and secondary minerals ?
- 8. Write down assumption and limitation stroke's law? Discuss about alluvial and black soils in India.
- 9. What are the benefits of soil organisms? Write down Classification of bacteria ?
- 10. What is Soil structure? Write down factors affecting soil structure formation.

--- End of Paper ---