বিদ্যাসাগর বিশ্ববিদ্যালয়

VIDYASAGAR UNIVERSITY

B.Sc. (Honours) in AGRICULTURE
1st Semester Examination 2021

PAPER—AGS-103

FUNDAMENTALS OF SOIL SCIENCE

Full Marks : 70

Time : 3 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

THEORY

1. Answer any *ten* questions. 10×2

(a) Define Soil Profile. What are the names of the master horizons?

(b) Write the difference between eluviation and illuviation process.

(c) Write the difference between Laterization and Podzolization.

(d) What is hardness of the minerals? Name the minerals with lowest and highest hardness in term of Moh Scale.

(e) Write the difference between soil texture and soil structure.

(f) What is thermal diffusivity?

(g) Name two field soil moisture methods.

(h) 1:1 and 2:1 expanding and non-expanding minerals.

(i) Mention two factors responsible for soil acidity.

(j) What is parent material?

(k) What is the difference between rocks and minerals?

(l) Write three components of the soil colour and explain its function.

(m) What is the Albedo?

(n) What is CEC (Cation exchange capacity)?

(o) Write down the Langmuir Adsorption isotherm equation and explain it terms.

2. Answer any *six* questions. 6×5

(a) Briefly explain soil weathering process.

(b) Describe the soil forming factors with proper explanation.

(c) Define Pedon and Polypedon. Write the names of the 9 epipedons and 19 endopedons.

(d) Explain soil order. How many soil orders are present in India? Discuss all orders very briefly.

(e) Write short notes on Bulk Density and Particle Density.

(f) Explain the soil moisture methods by Neutron Scattering probe meter.

(g) Write short note on Gravitational Water, Capillary water, Available water and hygroscopic water.

(h) Enumerate the factors affecting cation exchange capacity.

(i) Explain the kinds of soil acidity.

(j) Write down the working principle of tensiometer.

PRACTICAL

Answer any *two* questions. 2×10

1. What is soil pH? Explain briefly about the electrode and working principle of pH meter. Why we estimate pH from the soil?

2. Describe the principle and procedure of organic carbon estimation from soil.

3. What is Electrical Conductivity (EC) of the soil? Explain the factors affecting the electrical conductivity of a soil.

4. Draw the picture of pH meter electrodes and EC meter electrodes.

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