



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

B.Sc. Sec 1st Semester Examination, 2023

UCHESEC11001-CHEMISTRY

SOIL CHEMISTRY

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

GROUP-A

1. Answer any **five** questions from the following: 2×5 = 10
- (a) What is the difference between Particle density and Bulk density of soil?
 - (b) What is 'claypan'?
 - (c) Calcium is adsorbed more strongly than Sodium. Why?
 - (d) What do you understand by the term 'immobilization'?
 - (e) What are basic cations and acidic cations?
 - (f) Define CEC. What is its unit?
 - (g) Why is composting useful?
 - (h) What are the phosphorous deficiency symptoms in plants?

GROUP-B

2. Answer any **four** questions from the following: 5×4 = 20
- (a) (i) Draw a diagram to show a general relationship between soil pH and availability of plant nutrients in moderately weathered soils. 4
 - (ii) What do you mean by micronutrients and macronutrients? 1
 - (b) (i) A 1000 cm³ oven dry core has a bulk density of 2.0 g/cm³. The soil core is placed in a pan of water and becomes saturated. The oven dry soil and water at saturation weights 2525 g. Calculate the total soil porosity. 3
 - (ii) Why macropores are called aeration pores? 2
 - (c) (i) What do you mean by soil texture? 1
 - (ii) Discuss the relation between texture and use of soils. 4
 - (d) (i) What is Acid Soil? 1
 - (ii) What are the sources of acidity? 4
 - (e) (i) Write down in detail about any two of the important soil forming processes. 3
 - (ii) Which is more fertile among sand and silt? Why? 2
 - (f) (i) What are the advantages of using Vermicompost? 3
 - (ii) What are the different methods used to determine soil pH? 2

GROUP-C

3. Answer any **one** question from the following: 10×1 = 10
- (a) (i) Explain why: Water moves much more rapidly through Sandy soil than Clayey surface soil. 2
- (ii) What are the two approaches to assure plant growth from unfavourable soil pH? 2
- (iii) Why do some soil horizons have white colour? 2
- (iv) Why is compost called a waste? 2
- (v) What do you mean by 'Effervescence' and 'Rockiness'? 1+1
- (b) Write short notes on any **two** of the following: 5×2 = 10
- (i) Soil-Nitrogen Cycle
- (ii) Grades of Soil Structure
- (iii) Management of soil pH
- (iv) Mineralization of Organic Sulphur
- (v) Soil Buffer Capacity.

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