

Indian Statistical Institute

B. Stat. II Year: AGRICULTURAL SCIENCE

End-Sem Examination

Date: 28.04.2025

Full Marks: 50

Time: 2 hr

(Answer any **FIVE** questions)

1.
 - (a) Define soil texture. Why is it considered a fundamental property of soil?
 - (b) A soil sample contains 25% clay, 20% sand, and 55% silt. Determine the textural class of this soil using a textural triangle. Explain how soil texture affects water holding capacity and root penetration.
 - (c) What is the "feel method" for determining soil texture? Briefly explain.

(1+1+4+2+2)
2.
 - (a) How is multiple cropping advantageous over monocropping?
 - (b) Imagine you are visiting a village with the objective of improving farmers' livelihoods. Your initial finding from discussions with the farmers is that rice monocropping is the predominant cropping pattern in that area during the rainy season. Although water is generally available, the fields remain fallow during other seasons. What would be your approach and considerations to motivate the farmers toward crop diversification?
 - (c) A farmer has 20 ha of land. He grows rice in the entire field during the kharif season. During the rabi season, wheat is grown on half of the field, while the rest is used for vegetable cultivation. The field remains fallow during the summer season. Calculate the cropping intensity.

(2+4+4)
3.
 - (a) Define pedogenesis and describe the four main processes involved in soil formation.
 - (b) What is soil profile? Eluviation is most common in which horizon?
 - (c) Describe any two ecosystem services performed by soil.
 - (d) Differentiate between bulk and particle densities.

(4+2+2+2)
4.
 - (a) What are the advantages of mono-cropping?
 - (b) What is an intercrop?
 - (c) How can growing an intercrop be beneficial for the main crop?
 - (d) What are the possible disadvantages of intercropping?
 - (e) Explain any two factors influencing the selection of a cropping system in a given region
 - (f) What do you mean by fallow cropping?

(2+1+2+2+2+1)

5. (a) According to the former Planning Commission, how many agroecological zones are there in India?
(b) Among the following, which is the universally accepted land measurement unit: Katha, Hectare, Guntha?
(c) Give an example of a starch crop.
(d) Please classify crops based on crop duration, providing examples.
(e) Describe how drip irrigation differs from surface irrigation in terms of efficiency and application.
(f) A field receives 10 cm of irrigation water over 1 hectare. Calculate the total volume of water applied in cubic meters. (1 hectare = 10,000 m²)
(1+1+1+3+2+2)
6. (a) What is an integrated farming system (IFS)? Mention any two benefits of IFS.
(b) Describe two factors affecting the choice of farming system in an agroecological region.
(c) What is the difference between subsistence farming and commercial farming?
(d) A smallholder farmer grows crops and also maintains poultry and beekeeping. What type of farming system is this? Briefly explain its sustainability advantage.
(3+2+2+3)