

INDIAN STATISTICAL INSTITUTE

Recruitment for posts of Associate Scientist A (*Specialization: Agriculture*)

SECTION II

Syllabus for Online and Skill Tests

- **Crop Production:** Agronomic techniques of production of major agricultural and horticultural crops; Cropping systems; Agrometeorology; Growth and development of crops in adverse environmental conditions; Dryland agriculture; Weeds and their management; Soil fertility and fertiliser use; Integrated nutrient management; Sustainable land use systems; Soil, plant, water and atmosphere relationships; Principal and methods of seed production of major crops; Requirements and types of seed storage; Farm mechanisation and equipment; Tillage and pesticide application equipment; Precision agriculture.
- **Crop Protection:** Basics of insects, mites, plant parasitic nematodes and plant pathogens; Insect and nematode ecology; Plant disease epidemiology; Major pests (including nematode pests), diseases (fungal, bacterial and viral) and disorders of major agricultural and horticultural crops; Cultural, physical, biological, biotechnological, chemical and integrated management of pests and diseases; Host plant defence; Plant-pest relationships.
- **Agricultural Chemistry and Soil Science:** Pedogenic processes and their relationships with soil properties; Rocks, minerals and other soil forming materials; Soil texture, Soil structure and classification, Bulk density and particle density of soils and porosity; Humus, Humic acid, Fulvic acid; Soil moisture, Soil erosion, Land degradation; Soil colloids, Chemical equilibria, Chemical kinetics, Clay minerals, Adsorption-desorption, Cation and anion exchange, Soil organic matter; Essential elements in plant nutrition, Nutrient cycles in soil, Macro and micro nutrients in soil, manures and fertilizers, lime and gypsum requirement; Acid, Acid sulphate, Saline and alkali soils and their management; Irrigation water quality, Major soil groups of India; Soil and water pollution; Greenhouse gases; Soil biota, Soil microbial ecology, Types of organisms, Soil enzymes, Biofertilizers, Methods of soil analysis, Instrumentation.
- **Agricultural Statistics:** Measures of central tendency and dispersion; Sampling methods; Probability distribution, Design of experiments; Correlation and regression analysis; Tests of significance; Analysis of variance; Probit analysis.

Sample Questions for the Online Test

Note: For each of the questions there are four suggested answers, of which only one is correct. You will score

*4 marks for each correctly answered question,
0 mark for each incorrectly answered question, and
1 mark for each unattempted question.*

1. Which among the plants have the highest water use efficiency?
(a) C3 (b) C4 (c) CAM (d) All of these .
 2. ----- % depletion of available moisture is optimum for ploughing
(a) 0 – 25 (b) 25 – 50 (c) 50 – 75 (d) All of these .
 3. Growth regulator used in hybrid rice seed production programme is
(a) NAA (b) GA3 (c) ABA (d) CCC .
 4. Which of the following is a ripening hormone
(a) GA-3 (b) Auxin (c) Cytokinin (d) Ethylene .
 5. Browning of cauliflower is caused by the deficiency of
(a) Zinc (b) Iron (c) Boron (d) Manganese .
 6. Which of the following is a carbamate pesticide?
(a) Aldicarb (b) Heptachlor (c) Malathion (d) Endosulfan .
 7. Nematicide that liberate methyl isothiocyanate is
(a) Oxamyl (b) Carbofuran (c) Aldicarb (d) Dazomet .
 8. For preparation of 5 litres of 0.5% Bordeaux mixture, the amount of $CuSO_4$ required is
(a) 0.5g (b) 5g (c) 25g (d) 50g .
 9. Availability of which of the following nutrients increases under waterlogged condition?
(a) P (b) Fe (c) Mn (d) All of these .
 10. What are the basic principles of design of experiments?
(a) Randomization (b) Local control (c) Replication (d) All of the above .
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