



Syllabus

Subject : M.Sc. - Agriculture Science (Agricultural Botany/Agricultural Chemistry & Soil Science/Agricultural Zoology & Entomology)
Subject Code : 19

Note: The question paper shall consist of Short Answer Type questions to be answered in about 50 words each and Medium Answer Type Questions to be answered in about 150 words each. The Test will be of 1 hour 30 minutes duration.

AGRICULTURAL BOTANY

1. Historical, symptomology, properties and nature of plant viruses, modes of transmission of plant viruses. General principle of control of viral diseases in plants. A knowledge of the common viral diseases of potato tobacco, Hibiscus, cucurbits, beans and banana.
2. Historical. broad outlines of morphology, reproduction , nomenclature and classification of plant pathogenic bacteria.
3. History of Mycology, Taxonomy and nomenclature of fungi.
4. Origin and phylogeny of fungi. Different, systems of classification and their basis. Structure and life history of the chief representatives of fungi.
5. History of plant pathology. Dissemination of diseases, modes of infection symptomology, physiology of parasitism, mechanism of disease resistance, fungicides and their action.
6. Cell structure and function, cell wall, nucleus, mitochondria, golgi apparatus, chloroplasts and other cell organelles, their structure and function.
7. Cell division : mitosis and meiosis.
8. Polyploidy : Nature and classification of Polyploidy. Heridity and environment, laws of heredity; Linkage, crossing over and mapping of chromosomes. The nature of gene and factors affecting mutation.
9. History of plant breeding, its present status and scope. Mode of reproduction in crop plants. Heterosis and its application.
10. Regional soils of India in relation to crops and their production. Secondary effects on micro flora. Physical nature of soils and water relation of soils. Concept of water requirement of crops and the critical period of water requirement of plants and its significance in crop production. Formation of usar soils and their measurement. Control of alkalinity and salinity.
11. Physiology of flowering, photoperiodism, verbalization and their impact on crop production. Seed formation, longevity and multiplication. Physiology and biochemistry of herbicides. Physiology of propagation. Physiology of fertilization, fruit growth and ripening.
12. Mineral nutrition, uptake and translocation of solutes. Mutually beneficial and toxic influences of plants. Physiological role of Some major and minor elements such as N, P, K, Ca, Mg, B, Mo, Mn, Zn.

13. A study of the botany of important weeds associated with the crop plants of U.P. Methods of preventing introduction and spread of weeds. Principles and procedures of weed control Growth. inhibiting, and promoting chemicals and their composition.
14. Soil micro-organisms and their role in production. Principles, and practices of dry farming, special problems in dry farming mixed cropping and strip cropping in agriculture in India. Agronomic practices in relation to soil acidity and alkalinity.
15. Soil nitrogen losses and its restoration, Phosphorous deficiency and soil fertility. Fixation of nutrients in soil. Soil potassium in relation to soil fertility and plants growth and development. Plant production problems and methods. C/N ratio as a function of growth and development. The problems of non-irrigated soils. Tillage and its influence on plant growth.
16. Horticulture-importance and present position. Origin, history, breeding and production technology of important fruits such as Mango, Banana. Citrus, Guava. Papaya,
17. Grape. Pineapple, Litchi, Pomegranate, Ber, Apple, Pear and Walnut with special reference to climate, soil, propagation, cultivars, nutrition, irrigation and other orchard management practices.
18. History of gardening of India. Styles of gardening, their principles and practices with special reference to Mughal, Japanese and English gardens.
19. Frequency distribution. mean, median and mode. Standard deviation. Test of significance : t, F and chi-square tests. Experimental design basic principles, completely randomized, Randomized block, Latin square and Split- plot designs and their analysis.

AGRICULTURAL CHEMISTRY AND SOIL SCIENCE

1. Theory of acid and bases, pH and its determination, buffers, oxidation, reduction, catalytic reaction, colloids & their properties, Humus and clays.
2. Carbohydrates nomenclature, classification, proteins- classification, physical & chemical properties. Liquids classification and properties.
3. Soil texture & structure. Soil moisture & its movement. Soil chemistry : weathering of rocks & minerals. profile development. Soil forming processes. exchangeable properties of soil, organic matter-properties and its fractions. Reclamation of Soils. Quality of irrigation water.
4. Soil fertility-macro & micro nutrients.
5. Manures & fertilizers-classification, mode of action & utilization.
6. Uptake of nutrients.
7. Pesticides & residual toxicity.
8. Enzymes classification & their mechanism of action.
9. Metabolism of carbohydrates. lipids & proteins.
10. N-fixation, Phytohormones & vitamins.

AGRICULTURAL ZOOLOGY & ENTOMOLOGY

1. General introduction to animal kingdom and various phyla with special reference to agricultural and economic importance.
2. Agricultural importance of phyto-nematodes. snails, slugs, earthworms. crabs. birds, and mammals. their distribution. habit and life cycle.
3. Identification of poisonous snakes of India. Symptoms of snake bite and its antidotes,
4. Life history and control of animal vectors of human diseases and important parasites of man animals.

5. Local fishes of economic importance, planning and implementation of fish farming. knowledge of crustacean and molluscan fisheries.
6. Rat damage to crops and plantations. Methods of its control.
7. Classification of Phylum Arthropoda upto classes: general characters and examples. Position of insects in animal kingdom. Study of characters of insect orders of economic importance.
8. Life history. rearing methods of some useful insects viz. honeybee. silk worm and lac insects.
9. Insect morphology integument and its structure. regions, sclerites. segmentation of head : Its appendages, structure and function : modification of antennae and mouth parts of insects. Study of insect thorax and its appendages including genitalia.
10. Anatomy of grasshopper. digestive, respiratory, excretory, circulatory, reproductive. nervous system and sense organs.
11. Post embryonic development of insect, ecdysis, instars, metamorphosis, types of larvae and pupae.
12. Pest management: principle of integrated Pest management, concept. and procedure. Physical. mechanical, chemical, biological. and legislative control of insects. Insecticide poisoning and its antidotes.
13. Concept and importance of wild life conservation in relation to ecology and environment.