

AGRICULTURE (302)

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(302)**

Syllabus for Class 12

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Note:

There will be one Question Paper which will have 50 questions out of which 40 questions need to be attempted.

Unit-1: Agrometeorology, Genetics and Plant Breeding, Biochemistry and Microbiology

Agrometeorology: Elements of Weather-rainfall, temperature, humidity, wind velocity, Sunshine weather forecasting, climate change in relation to crop production.

Genetics & Plant Breeding :

- (a) Cell and its structure, cell division-mitosis and meiosis and their significance
- (b) Organization of the genetic materials in chromosomes, DNA, and RNA
- (c) Mendel's laws of inheritance. Reasons for the success of Mendel in his experiments, Absence of linkage in Mendel's experiments.
- (d) Quantitative inheritance, continuous and discontinuous variation in plants.
- (e) Monogenic and polygenic inheritance.
- (f) Role of Genetics in Plant breeding, self and cross-pollinated crops, methods of breeding in field crops-introduction, selection, hybridization, mutation and polyploidy, tissue and cell culture.
- (g) Plant Biotechnology-definition and scope in crop production.

Biochemistry: pH and buffers, Classification and nomenclature of carbohydrates; proteins; lipids; vitamins, and enzymes.

Microbiology: Microbial cell structure, Micro-organisms- Algae, Bacteria, Fungi, Actinomycetes, Protozoa and Viruses. Role of micro-organisms in respiration, fermentation, and organic matter decomposition

Unit-2: Livestock Production

Scope and importance : (a) Importance of livestock in agriculture and industry, White revolution in India. (b) Important breeds Indian and exotic, distribution of cows, buffaloes, and poultry in India.

Care and management : (a) Systems of cattle and poultry housing (b) Principles of feeding, and feeding practices.

Balanced ration definition and ingredients. (d) Management of calves, bullocks, pregnant and milch animals as well as chicks cockerels and layers, and poultry. (e) Signs of sick animals, symptoms of common diseases in cattle and poultry, Rinderpest, black quarter, foot and mouth, mastitis and haemorrhagic septicaemia, coccidiosis, Fowl pox and Ranikhet disease, their prevention, and control.

Artificial Insemination: Reproductive organs, collection, dilution, and preservation of semen and artificial insemination, **role of artificial insemination in cattle improvement. Livestock Products:** Processing and marketing of milk and Milk products.

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Unit-3: Crop Production

Introduction : (a) Targets and achievements in foodgrain production in India since independence and its future projections, sustainable crop production, commercialization of agriculture and its scope in India. (b) Classification of field crops based on their utility-cereals, pulses, oils seeds, fibre, sugar, and forage crops.

Soil, Soil fertility, Fertilizers, and Manures: (a) Soil, soil pH, Soil texture, soil structure, soil organisms, soil tilth, soil fertility, and soil health. (b) Essential plant nutrients, their functions, and deficiency symptoms. (c) Soil types of India and their characteristics. (d) Organic manure, common fertilizers including straight, complex, fertilizer mixtures and biofertilizers; integrated nutrient management system.

Irrigation and Drainage: (a) Sources of irrigation (rain, canals, tanks, rivers, wells, tubewells). (b) Scheduling of irrigation based on critical stages of growth, time interval, soil moisture content, and weather parameters. (c) Water requirement of crops. (d) Methods of irrigation and drainage. (e) Watershed management

Weed Control: Principles of weed control, methods of weed control (cultural, mechanical, chemical, biological, and Integrated weed management).

Crops: Seedbed preparation, seed treatment, time and method of sowing/planting, seed rate; dose, method, and time of fertilizer application, irrigation, intercultural and weed control; common pests and diseases, caused by bacteria, fungi viruses, and nematode and their control, integrated pest management, harvesting, threshing, post-harvest technology: storage, processing, and marketing of major field crops-Rice, wheat, maize, sorghum, pearl millet, groundnut, mustard, pigeon-pea, gram, sugarcane, cotton, and berseem.

Unit-4: Horticulture

- (a) Importance of fruits and vegetables in the human diet, Crop diversification & processing Industry. (b) Orchard- location and layout, ornamental gardening, and kitchen garden. (c) Planting system, training, pruning, intercropping, protection *from frost* and sunburn. (d) Trees, shrubs, climbers, annuals, perennials-definition and examples. Propagation by seed, cutting, budding, layering, and grafting. (e) Cultivation practices, processing, and marketing of (i) Fruits - mango, papaya, banana, guava, citrus, grapes. (ii) Vegetables - Radish, carrot, potato, onion, cauliflower, brinjal, tomato, spinach, and cabbage. (iii) Flowers - Gladiolus, canna, chrysanthemums, roses and marigold. (f) Principles and methods of fruit and vegetable preservation. (g) Preparation of jellies, jams, ketchup, chips and their packing.