

**Syllabus for the Post of Livestock Extension Officer/Adhidarshak/Pradarshak
(Resham) & Nirikshak Resham**

पाठ्यक्रम — पशुधन प्रसार अधिकारी/अधिदर्शक/प्रदर्शक (रेशम) तथा निरीक्षक रेशम

1.1 CYTOLOGY AND MOLECULAR BIOLOGY: Cell Structure, Cell Theory, Prokaryotic and Eukaryotic cell, Cell wall, Cell membrane and Cellular Organelles, Cell Cycle and Cell Division, Chromatin, Nucleic acid as genetic material, Structure of DNA and RNA, Replication of DNA, DNA fingerprinting, Genome and human genome project, Genetic Code, Structure of gene, Oncogenes, Protein Synthesis.

1.2 MICROBIOLOGY: Classification of microorganism, Bacteria, lytic cycle of bacteria, Viruses, Viroid, Prions; Bacteriophage, Transduction, transformation and conjugation, Human health and diseases (AIDS, Pneumonia, Common cold, Malaria, Typhoid, Ascariasis, Filariasis, Amoebiasis, Ring worm, Cancer) Immunity, drugs and alcohol abuse, antibiotics.

1.3 PLANT KINGDOM: General characteristics, structure, Biological classification, Systematics and binomial system of nomenclature, reproduction, economic importance and Alternation of generation of Algae, lichens, Fungi, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms.

1.4 ANIMAL KINGDOM: Codes of Nomenclature, Concept of Species, Speciation, General characteristics and classification of Chordates and Non-Chordates

1.5 ANATOMY:

Anatomy of flowering plant: Tissue and Tissue system, Anatomy of root, Shoot and leaves. Secondary growth, Anomalous secondary growth.

Structural organisation in Animals: Animal tissues, Organ and Organ System, anatomy and functions of different systems of an annelid (Earthworm) an Insect (Cockroach) and an Amphibian (Frog).

1.6 MORPHOLOGY:

Plant Morphology: The root, Stem, Leaf, Inflorescence, Flower, Fruit, Seed, Description of Families with floral diagram and floral formula (Fabaceae, Solanaceae, Liliaceae).

Animal Morphology: Morphology of annelid (Earthworm) an Insect (Cockroach) and an Amphibian (Frog).

1.7 REPRODUCTION:

Plants: Asexual and Sexual reproduction, structure of flower, microsporogenesis, Megasporeogenesis, Pollination, fertilization, Development of Dicot and monocot embryo, seed and fruits, Dormancy, Polyembryony, Parthenocarpy, apomixis.

Human: Male reproductive system, female reproductive system, Gametogenesis, menstrual cycle, fertilization, Implantation, embryo development, pregnancy, parturition and lactation. Reproductive health: Population and birth control, contraception and Medical termination of pregnancy (MTP), sexually transmitted diseases (STD) and Infertility.

1.8 PLANT PHYSIOLOGY: Diffusion, Osmosis, Absorption of water, Active and Passive absorption, Imbibitions, Transpiration- Factors effecting rate of transpiration, Mechanism of opening and closing of stomata; Mineral Nutrition, Absorption of minerals, minerals deficiency symptoms, Translocation of Solutes, Ascent of SAP, Mechanism of photosynthesis, factors effecting rate of photosynthesis and Respiration, C₃ Cycle, C₄ Cycle, CAM cycle, Photo respiration, Phytohormones, photoperiodism, vernalisation.

1.9 HUMAN PHYSIOLOGY: Digestion and absorption, breathing and exchange of gases, body fluids and circulation, excretory products and their elimination, locomotion and movement, neural control and coordination, chemical coordination and integration.

1.10 BIOMOLECULES: Primary and secondary metabolites, biomacromolecules, proteins, polysaccharides, nucleic acids, structure of proteins, nature of bonds linking monomers in a polymer, dynamic state of body constituents, Vitamins, concept of metabolism, metabolic basis for living being, the living state, Enzymes.

1.11 GENETICS AND BIOTECHNOLOGY: Mendel's law of inheritance, inheritance of one gene, inheritance of two genes, Chromosomal theory of inheritance, deviation from mendelian ratio (Gene interaction, incomplete dominance, complete dominance, multiple alleles) sex determination in animals; linkage and crossing over, mendelian disorders and chromosomal disorders in human, Principles of biotechnology, recombinant DNA technology, application in health and agriculture, genetically modified (GM) organisms, biosafety issues.

1.12 ECOLOGY: Ecology and environment (Definition, scope and branches), Concept of Ecosystem: components, structure and function of ecosystem, types of ecosystem. Energy flow in an ecosystem, ecological pyramids, ecological succession, Concept of primary and secondary productivity. Ecotone, Ecotype and edge effect, ecosystem services.

1.13 ORGANISMS AND POPULATION: Organisms and its environment, Microbes in human welfare (microbes in household products, industrial products, sewage treatment, production of biogas, as biocontrol agents) population and ecological adaptations, population growth and interaction, Bio-geochemical cycles (C, N, O, P, S) their role and importance,

1.14 BIODIVERSITY: definition, scope of biodiversity, reason for its depletion, ex-situ and in-situ conservation, Biosphere reserve, National parks, Wildlife Sanctuaries, Zoos, endemic species, biodiversity hot spots, IUCN categories-Red data book, biodiversity conservation plans in India.

1.15 ENVIRONMENTAL POLLUTION AND ISSUES: Definition threats and control measures of Air, Water, Soil, Noise and Radioactive Pollution, Primary and Secondary Pollutants, Green house effect, Global Warming, Ozone Depletion, Acid Rain, Chipko movement, Deforestation and Afforestation, Degradation by Improper resource utilization and maintenance

1.16 ANIMAL HUSBANDRY

Domestication of farm animals, livestock population trends in India, Breeds (Indigenous, exotic & crossbred strains involved in India) of Cattle, Buffalo, sheep, goat, poultry. Methods of breeding, System of breeding, Basis & methods of selection, Identification, Livestock development programs in India. Importance of livestock in agriculture and industry, white revolution in India.

1.17 ANIMAL FODDER AND HOUSING: Nutritive value of common feeds & fodders, Preservation of fodder crops (Hay & Silage making), Feeding Standards. Nutritive requirement of farm animals. Poultry Nutrition, Housing for different farm animals. Types of Housing, space requirements in animal houses. Care and management (Animal body structure and functions, housing of dairy and poultry animals, production of milk products and eggs, principles of disease management and vaccination, Poultry management.

1.18 ARTIFICIAL INSEMINATION: Reproductive and Digestive system of ruminant & non-ruminant animals, Reproductive organs, collection, dilution and preservation of semen, artificial insemination, role of artificial insemination in cattle improvement.

1.19 AGRICULTURE: Definition and scope of agriculture in National Economy, Different disciplines of agriculture, Principles of crop production, climate, soil preparation, tillage, Irrigation and water management, nutrient management, weed management, plant protection, cropping systems, harvesting, threshing and storages.



1.20 AGRICULTURAL CROPS: Classification of field crops, cultivation of crops- wheat, paddy, cotton, jowar, bajra, maize, soya bean, pigeon pea, mustard, sunflower, cowpea, groundnut, gram, tobacco, berseem, Lucerne, potato and sugarcane.

1.21 SOIL: Soil profile and classification, physical and chemical properties, soil pH, Soil texture, structure, organisms, tilth, fertility and soil health, biofertilizer, organic nature of soil, common fertilizers, including straight, Farm yard manure (FYM), organic farming, green manuring, vermicompost.

1.22 HORTICULTURE CROPS: Vegetables (Raddish, Carrot, Potato, Cauliflower, Brinjal, Tomato, Onion, Garlic and Cabbage) Fruits (Mango, Papaya, Banana, Guava, Citrus, Grapes and Litchi) Flowers (Rose, Hibiscus, Gladiolus, Marigold and Crysanthemum, Buransh), Principles and methods of fruits and vegetable preservation, preparation of Jellies, Jams, Ketchup, Chips and their packing, Ornamental gardening and Kitchen Gardening.

1.23 WEED AND PEST CONTROL: Principles of weed control, methods of weed control, cultural, mechanical, chemical, biological and integrated weed management, Integrated pest management, Green Revolution.

