

**FURTHER DETAILS REGARDING MAIN TOPICS OF
PROGRAMME NO. 05/2013 (Item No. 1)
WILD LIFE ASSISTANT GRADE - II
KERALA FOREST DEPARTMENT
(CATEGORY NO. 444/2011)**

1. ZOOLOGY

Animal diversity

General characters, zoological importance and systematic positions of animals in all phyla giving special importance to wild life.

Animal Physiology

Nutrition & digestion, Metabolism -Carbohydrate, protein & lipid metabolism

Circulatory system - structure and working of heart, pacemaker, composition of blood, blood groups, blood clotting.

Respiratory system -Gas exchange, respiratory pigments, transport of CO₂ Ss O₂

Excretory system - types of excretion, structure of nephron, urine formation, osmoregulation.

Muscle physiology -types of muscle, ultra structure of striated muscle, mechanism of muscle contraction, muscle twitch, tetanus, summation, tonus, fatigue, oxygen debt, rigor mortis.

Nervous system - structure & types of neuron, nerve impulse transmission, synapse & synaptic transmission, neurotransmitters, reflex action.

Endocrine system - endocrine glands & hormones produced functions of hormones, role of hypothalamus and their secretions, mechanism of hormone action.

Reproductive system - male and female reproductive organs, reproductive cycles, pregnancy, parturition, lactation, birth control methods.

Cell biology & Molecular biology

Cell - cell theory, structure & functions of cell membrane and organelles

Cell division - mitosis, meiosis Biology of cancer Nature of Genetic material - Griffith's expt.,

Contributions of Avery, MacLeod and MacCarthy, Hershey & Chase's expt., transformation, transduction. Structure DNA, types of DNA & RNA, DNA replication, Genetic code

DNA sequencing, DNA finger printing Genomic library, cDNA library, PCR and its

applications *Blotting* techniques - southern *blotting*, western blotting, northern blotting.

Genetics & Embryology

Mendel's experiments Gene, interaction of genes Sex determination, linkage, crossing over

& recombination Types of mutations, molecular basis of mutation, cytoplasmic inheritance

Fertilization, types cleavage, gastrulation Type of placenta in mammals.

Fundamentals of wild life

Zoogeographical realms Biogeographic classification of India Protected area network - sanctuaries, National parks, tiger reserves, biosphere reserve Endangered and endemic animals Wild life census and monitoring methods.

2. BOTANY

Anatomy: Simple & complex tissues - Components of vascular tissues - types of vascular bundles - Primary structure of dicot & monocot stems & roots -Normal secondary growth in thickness in dicot stems & roots -cambium: fusiform & ray initials -storied & nonstoried cambium- radial & longitudinal system - periderm- lenticels- annual rings- dendrochronology- tyloses. Wood: spring wood/ autumn wood - porous/non porous wood - ring porous/diffuse porous wood - hard wood/soft wood, heart wood/sap wood- tension wood, reaction wood, compression wood.

2. Physiology: Importance of water to plants - absorption & translocation of water - transpiration - nutrition: photosynthesis- autotrophs & heterotrophs - special modes of nutrition- nutrient cycling in nature - plant growth hormones - plant movements

3. Taxonomy: Herbs/shrubs/trees. Climbers/creepers/stragglers/lianas. Classification of plants: Artificial/natural/phylogenetic systems. Species concept- Taxon- Binomial nomenclature -ICBN-herbarium technique- botanical gardens. Dendrology.

4. Plants & human welfare: Food plants (Cereals, millets, pulses, tuber/starch/sugar/oil yielding plants, spices & condiments, beverages) - Plants yielding resins/dyes/tannins/ gums/mucilages - Timber yielding plants - Medicinal & aromatic plants. Pharmacognosy: Definition- scope - sources of crude drugs (Roots/ rhkomes/leaves/flowers/fruits/seeds). Ethnobotany: Importance-methods of collection of ethno-botanical data - tribals of Kerala - common plants used by tribals.

5. Environmental Science: Concept of ecosystem - components of ecosystem - different types (Aquatic & terrestrial). Major terrestrial biomes- Pond, grassland, desert & forest ecosystems - myristica swamps - mangroves. Food chain - food web - ecological pyramids - energy flow in an ecosystem. Ecological groups (Hydrophytes, xerophytes, mesophytes, parasites, epiphytes, insectivores). Vegetational types in India. Ecological succession: Causes-mechanisms-seral stages-pioneer & climax communities-hydrosere-xerosere. Concept of biodiversity- significance - threats - in situ & ex situ conservation - biodiversity hotspots - megadiversity centres-IUCN, MAB, Red data book, UNEP. Natural resources: renewable & nonrenewable. Sustainable development- Organic farming- biofertilizers- bioremediation-biopesticides/bioinsecticides-alternate energy sources.

3. FORESTRY

Introduction to Forestry: Forests; definitions, role, benefits; direct and indirect - Tropical and temperate forests - Forestry, definitions, divisions and interrelationships, agroforestry, farm forestry, social forestry and community forestry - Classification of forests; territorial, administrative, types etc. - Global warming, mechanisms to control, carbon sequestration, CDMs, Kyoto protocol. National and international organizations in forestry- World forestry day, world environment day and Vanamahotsava. Forest conservation movements in India.

Fundamentals of Geology and Soil Science Composition of earth's crust, soil as a natural body - Pedology- Rocks types, Igneous, sedimentary and metamorphic, classification- Soil forming minerals, definition, classification-Weathering of rocks and minerals, weathering factors, physical, chemical and biological agents involved- Formation of various soils. Physical and chemical properties of soil - Soil organic matter decomposition-pH- Soil nutrients- Soil water forms - hygroscopic capillary and gravitational - Infiltration and percolation- Land capability classification.

Forest recreation, landscape architecture and urban forestry : Definition and scope - social and environmental aspects of recreation- Principles and practices of landscaping- landscape designs, formal and informal - landscape components, lawn, pergolas, hedges, edges, topiary, baloons, arbours, carpet beds, trees, flower beds, annuals, climbers. Urban forestry - definition and scope — uses of urban forests, management of urban forest -Planning and planting programmes in institutional and industrial complexes, roads, bridges, parking area etc.

Forest management, policy and legislation : Definition, scope, objective and principles of forest management, organization of state forests-. Sustainable forest management - Working plan preparations, objectives and uses- Forest maps and their uses. Joint forest management, concept and principles - National forest policies, scope and importance- Indian judicial system- Legal definitions, application of penal code to forests, General principles of criminal law- Indian Forest Act, 1927, general provisions - Forest (Conservation) Act, 1980. Biological Diversity Act 2002 and Biological diversity rules 2004.

Wildlife Management : Definition, history of wildlife management and conservation in India- Values of wildlife, aesthetic, recreational, scientific, educational, commercial and ecological values - Red Data Book and red listing, IUCN revised red list categories - Wildlife (Protection) Act, 1972 and amendments - Special projects for wildlife conservation - Project Tiger and Musk Deer Project etc. - Introduction and reintroduction of species - Wildlife corridors - Ecotourism, definition, evolution and trends in ecotourism- Ecotourism in protected areas - Ecotourism as a tool for management of common property resources.

4. VETERINARY SCIENCE

Livestock Production Management:

Introductory animal husbandry. Common animal husbandry terms. Body conformation and identification. Dentition and ageing of animals. Transport of livestock by rail, road, air and on foot. Common farm management practices including disinfection, isolation, quarantine and disposal of carcass. Introduction to methods of drug administration. Common vices of animals, their prevention and care. Breeds and descriptors of important breeds of cattle and buffaloes. General management and feeding practices of calves, heifers, pregnant, lactating and dry animals, and bulls and working animals.

Principles of Animal Nutrition and Feed Technology

Importance of nutrients in animal production and health. Nutritional terms and their definitions. Importance of minerals (major and trace elements) and vitamins in health and production, their requirements and supplementation in feed. Common feeds and fodders, their classification, availability and importance for livestock production.

Veterinary Epidemiology and Zoonoses

Definitions and aims of epidemiology. Surveillance and monitoring of livestock diseases. National and International regulations on livestock diseases. Role of OIE and laws on international trade on animals and animal products. Definition, history and socio-economic impact of zoonotic diseases. Role of domestic, wild, pet and laboratory animals and birds in transmission of zoonoses.. Reservoirs, clinical manifestations in animals and the management of the following zoonoses: rabies, Japanese encephalitis, Kyasanur forest disease, influenza, anthrax, brucellosis, tuberculosis, leptospirosis, listeriosis, plague, rickettsiosis, chlamydiosis and dermatatophytosis.

Veterinary toxicology

General Toxicology: Definitions, fundamentals and scope of toxicology. General approaches to diagnosis and treatment of poisoning. Toxicity caused by metal and non-metals: Arsenic, lead, mercury, copper, selenium, molybdenum, phosphorus, nitrates and nitrites, common salt and fluoride. Toxicity caused by plants and weeds. Drug toxicity and toxicity caused by agrochemicals. Venomous bites and stings: Snake bite, scorpion, spider, wasp stings and toad poisoning.

Zoo/Wild Animal Breeding, Nutrition, Management and Healthcare

Population dynamics of wild animals, effective population size of wild animals captivity/zoo/natural habitats. Planned breeding of wild animals. Controlled breeding and assisted reproduction. Breeding for conservation of wild animals. Feeding habits, feed and feeding schedules of zoo animals. Nutrient requirements of wild animals. Restrain, capture, handling, physical examination and transport of wild and zoo animals. Acts and Rules related to Zoo and wild animals. National and international organizations and institutions interlinked to wild and zoo animals - role and functioning.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.