

## **SCHEME AND SYLLABUS FOR THE POST OF ASSISTANT SERICULTURE OFFICER**

### **SCHEME**

<b>Subject</b>	<b>No. of Questions</b>	<b>Duration (Minutes)</b>	<b>Maximum Marks</b>
<b><u>PART-A:</u> Written Examination (Objective type)</b>			
Paper-1: General Studies	150	150	150
Paper-2: Optional Subject 1. Sericulture; or 2) Botany and Zoology; or 3) Agriculture. N.B.: Candidate has to opt for one of the above subject.	150	150	150
<b><u>PART-B:</u> Interview (Oral Test)</b>			30

### **SYLLABUS**

#### **Paper-1: GENERAL STUDIES**

General Science

Current events of National and International importance.

History of India and Indian National movement. India and World Geography.

Indian Polity and Economy.

General mental Ability.

Questions on General Science will cover General appreciation and understanding of science including matters of everyday observation and experience, as may be expected of a well educated person who has not made a special study of any particular scientific discipline. In current events, knowledge of significant national and international events will be tested. In History of India, emphasis will be on broad general understanding of the subject in its social, economic and political aspects. Questions on the Indian National Movement will relate to the nature and character of the nineteenth century resurgence, growth of nationalism and attainment of Independence. In Geography, emphasis will be on Geography of India. Questions on the Geography of India will relate to physical, social and economic geography of the country, including the main features of Indian agricultural and natural resources. Questions on Indian Polity and Economy will test knowledge of the country's political system and Constitution of India, Panchayati Raj, Social Systems and economic developments in India. On general mental ability, the candidates will be tested on reasoning and analytical abilities.

#### **PAPER-2: (OPTIONAL SUBJECT):**

##### **1) SERICULTURE**

**SERICULTURE AS AN AGRO-INDUSTRY:** Nature of silk - Concise account of four varieties of silk produced in India - Life cycle of silkworm - Economic importance and prospects of silk fibers.

**MULBERRY CULTIVATION:** Major features of silk culture - Cultivation of mulberry - agro economical aspect - (climate, rainfall, elevation, soil location and topography) - Environmental factors - Preparation of land propagation - Planting season, distance - Varieties of mulberry - System of planting (pit and row) - Inter cultivation - Mulching, manuring and pruning - Trimming of mulberry plants - Harvesting of leaves - Preservation of leaves.

**DISEASES AND PESTS OF MULBERRY:** Disease - powdery mildew leaf spot - Prevention and Control of insect pests - Leaf eating caterpillar (*Diacrisia oblique*) - Jassids (*Empassea flavescens*) thrips, mealy bugs, - scale insects, stem girdlers beetle - Powder - post beetle.

**SILK WORM EGG PRODUCTION:** Silk worm seed production - Grainages - Loose eggs - Embryonic growth - Hibernating (Dialpausing) eggs - Techniques of cold storage of eggs - Artificial hatching - Incubation and the factors involved - Basics of equipment of grainages.

**SILK WORM REARING:** Principles of silkworm rearing - Number of crops per year - Varieties of silkworms - Conditions of mulberry growth - Facilities for rearing - Rearing housing and rearing equipments - Disinfection - brushing of loose eggs - Environmental conditions for rearing silk worms - Temperature, humidity, light and air.

**BED CLEARING:** Frequencies and methods of cleaning -- Spacing - Issued frequency of spacing moulting - Rearing of young stage of silkworm - Co-operative rearing - young silkworm - Rearing of late stage of silkworm - Mounting and Harvesting - Process of Ripening - Process of Spinning - Mounting of worms - Care during spinning - Harvesting - Economics of silkworm rearing.

**DISEASES OF SILKWORMS:**

- Disease Pebrine - Casual agent infection and symptoms.  
 Disease Flacheries - Casual agent infection and symptoms.  
 Disease Grasseries - Casual agent infection and symptoms.  
 Disease Muscardine - Calcimo - Casual agent infection and symptoms.

PESTS OF SILKWORM: Uzifly (*Tricholygea bambyis*) life cycle and disease - Dermistid beetle - life cycle, disease and culture.

REELING: Reeling appliances - Problems of reeling cocoon.

COCOON MARKETING: Sorting of cocoons, testing and grading, price fixation, cocoon auctioning, silk exchange.

AGENCIES FOR SERICULTURE DEVELOPMENT: Role of various agencies such as DRDA, ISDP, National Banks, NABARD, Co-operative institutions in improvement of sericulture in India. - Role of CSB in the promotion of sericulture and R & D activities.

## **2) BOTANY and ZOOLOGY**

1. Ultra structure of plant cell, structure of cell organelles and functions
2. Cell Division - Mitosis and Meiosis
3. Tissue systems in plants - Origin, structure, and function of simple and complex tissues
4. Classification and taxonomy of plants - Bentham and Hooker's system of classification. General characters of major groups
5. Types of reproduction and life cycles in Thallophyta, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms
6. Concept of water potential, stomatal movement and transpiration.
7. Plant nutrition - Uptake of ions, chemical fertilizers, NPK
8. Photosynthesis - Photo-phosphorylation, path of carbon in photosynthesis (C3, C4 and CAM pathways)
9. Respiration - Elementary account of Bio-energetics, glycolysis, Krebs's cycle, electron transport system, oxidative phosphorylation, anaerobic respiration and fermentation.
10. Nitrogen metabolism - Biological nitrogen fixation, nitrate reduction and bio-synthesis of amino acids
11. Enzymes - Properties and mechanism of action
12. Phyto hormones - General account of auxins, Gibberellins, Cytokinins, ethylene and abscisic acid. Role of phytochrome in flowering
13. Mendel's laws of inheritance, structure of nucleic acids RNA and DNA
14. Gene concept, genetic code, protein synthesis and gene regulation
15. Theories of organic evolution
16. Basic Ecological concepts, characteristics of Hydrosere and Xerosere, and ecology of tropical forest
17. General account of Bacteria and Viruses and their significance
18. Sericulture - General introduction, sericulture as an agro-industry and mulberry cultivation.

I. NON-CHORDATA: Protozoa: 1. Pathogenic Protozoa of Human importance.

Porifera: 1. Systematic position and affinities of sponges -- 2. Sponge industry.

Ceolenterata: 1. Polymorphism in siphonophora - 2. Coral formation - 3. Systematic position of Cytenophora.

Platyhelminthes: 1) Parasiti adaptations in platyhelminthes - 2) Life cycle & Polyembryony with reference to Fasciola.

Nemathelminthes: 1) Morphology, lifecycle and Pathogenecity of Wuchereria bancrofti, Dracunculus medinensis and Enterobius Vermicularis.

Annelida: 1) Significance of Coelom - 2) Metamerism - 3) Regeneration in Polychaetes

Arthropoda: 1) Respiratory organs and mechanism of respiration in arthropoda 2) Vision in arthropoda - 3) Useful and harmful insects - 4) Affinities & taxonomic position of Peripatus.

Mollusca: 1) Torsion & Detorsion in Gastropoda.

Echinodermata: 1) Water Vascular system - 2) Larval forms of echinodermata & their evolutionary significance.

Hemichordata: 1) Affinities of Hemichordata.

### II. CHORDATA:

Protochordata: (UROCHORDATA & CEPHALOCHORDATA) : 1) Retrogressive metamorpho-sis - 2) Affinities & Phylogenetic importance of Branchiostoma.(Amphioxus) Cyclostomata: 1) Affinities of Cyclostomata - 2) Ammocoete LarwaFishes: 1) Economic importance of Sharks - 2) Distinctive features of Crossopterygii - Latimeria & Lungfishes - 3) Airbladder in fishes. Amphibia: 1) Parental care.

Reptilia: 1) Gen. organisation of Cholonia, squamata, Rhynchocephalia and Crocodilia - 2) Dinosaurs.

Aves: 1) Distinctive fetures of archaeoptery - 2) Flight adaptations in birds.

Mammalia: 1) Distinctive features of Prototheria, Metatheria & Eutheria - 2) Dentition.

GENERAL BIOLOGY:(Genetics, Cytology, Embryology, Ecology, Physiology & Sericulture)

GENETICS:1) Epistasis (GENE INTERACTION) - 2) Linkage & Crossing over & Chromosomes mapping - 3) Sex determination & Sex linked inheritances - 4) Multiple alleles, blood groups.

CYTOLOGY: 1) Cell organelles - 2) Special Chromosomes - Lampbrush & Polytene.

EMBRYOLOGY: 1) Foetal membranes - 2) Placenta.

ECOLOGY: 1) Components of an Ecosystem - 2) Trophic levels, food chain & food web - 3) Energy flow in ecosystem - 4) Pollution - Serious threat to life.

PHYSIOLOGY: 1) Metabolism of respiration, Respiratory quotient and Respiratory pigments - 2) Impulse propagation - Muscular contraction - 3) Endocrine system.

SERICULTURE: 1) General introduction, Concise account of 4 varieties of silk produced in India - 2) Socio-economic importance of Sericulture as compared with other agro-based crops (Paddy, Sugarcane & Jawar) - 3) Introduction to silk worm races - Uni, Bi and multivoltine races(Foreign & Indian) - 4) Properties and Composition of silk - 5) Principles of silk worm rearing conditions and appliances required - 6) Diseases and Pests of silkworm - 7) Cocoon sorting in relation to marketing - 8) Introduction to grainage practices, seed production.

### **3) AGRICULTURE**

PRINCIPLES OF AGRONOMY: Agriculture in India - Development of Scientific Agriculture - Different agroclimatic Zones of Andhra Pradesh - Utility of weather forecast and satellite forecasting in Agriculture.

CROP PRODUCTION: Factors influencing crop production - Cropping systems - Principles of crop rotation, Sequence cropping, mixed cropping, inter-cropping, relay cropping, multiple cropping, multi-storied cropping and alley cropping

IRRIGATION AND WATER MANAGEMENT: Major, medium and minor irrigation projects in Andhra Pradesh. Command Area Development - Area under irrigation in Andhra Pradesh. Crop water requirements - Water management practices for different crops - Methods of irrigation, their suitability and limitations.

DRY-LAND AGRICULTURE: Problems of crop production in dry farming areas of Andhra Pradesh - Land use classification - Existing pattern of land use, capability classification and cropping pattern in low rainfall areas. Drought and its management. Water harvesting - Fertilizer use in dry land areas - Normal and contingency crop planning - Dryland technology for black and red soils, Agronomic conservation measures, mulches, watershed management - Area development approach, alternate land use planning, Development of integrated sustainable farming systems.

WEED MANAGEMENT: Harmful and beneficial effects and losses due to weeds - Herbicides - Advantages and limitations of herbicide usage in India - Selectivity of herbi-cides - Herbicides and their interaction with fertilizers, insecticides and fungicides. Botany of Field Crops: Cytology, Genetics and Plant Breeding

BOTANY OF FIELD CROPS:- Inheritance of quantitative characters.

PLANT PHYSIOLOGY: Seed Development - Physiological maturity, metabolic changes during seed development and germination, seed viability and vigour, seed storage and longevity. Seed and bud dormancy - Method of breaking seed dormancy in crop plants - Seed production and certification - Seed processing - Seed testing.

PRINCIPLES OF SOIL SCIENCE: Soils of Andhra Pradesh - Major soil types, Characteristics and their distribution. Soil Chemistry and soil fertility - soil - Plant relationships - Rhizosphere effects, concept of critical limits –

PROBLEM SOILS AND THEIR MANAGEMENT: Acid and saline soils and methods of reclamation - Irrigation water - Quality of Irrigation Water and its appraisal - Indian Standards for water quality.

MANURES AND FERTILIZERS: Classification, Bulky and concentrated organic manures, preparation of FYM and composites from organic wastes. Green manures and green leaf manures. Importance of organic manures in soil fertility - Commercial fertilizers - Potassic Fertilizers - Bio-fertilizers - Types of bio-fertilizers, methods of preparation and use of bio-fertilizers.

INTRODUCTORY MICROBIOLOGY: Microbiology of soil, water food and rumen-microbial cycling of carbon, nitrogen phosphorus and sulfur, biological nitrogen fixation, microbial spoilage of foods and preservation, micro-organisms associated with water, rumen micro-flora. Industrial applications of micro-organisms - Microbial fermentations.

**AGRICULTURAL ENTOMOLOGY:** Importance of insect and non-insect pests. Non-insect pests - Economic importance, gross morphology, nature of damage and control of plant parasitic nematodes, mites, crabs, snails and slugs. Birds and Rodents of Agricultural importance nature of damage and control. Crop pests and their management - Store grain pests and their management.

**PLANT PATHOLOGY:** Fundamentals of Mycology, Bacteriology and Virology - Phenomenon of infection - Mechanisms of disease resistance in plants - Pre and post infectional defence mechanisms. Plant disease epidemiology - Assessment of plant disease and crop loss. Remote sensing, its use in the assessment of plant disease and crop loss.

**PRINCIPLES OF HORTICULTURE:** Effect of soil and climatic factors on horticulture crops - Pomology - Major Fruits - Temperate Fruits.

**SOCIAL AND FARM FORESTRY:** Afforestation - Methods - Social forestry nurseries and practices - Role of Multipurpose trees in Farm Forestry - Principles and practices of agro-forestry systems, choice of tree species suitable for agroforestry and management implications - Forest products, their processing and use.

**REMOTE SENSING:** - Application of remote sensing technology for land use planning with reference to forestry.

**PRODUCTION AND FARM MANAGEMENT:** Economics: Agricultural Marketing, Finance and Co-operation - Agricultural Business Management - Agro Industries - Food processing and marketing - Export potential for agricultural products.

**AGRICULTURAL EXTENSION AND TEACHING METHODS:** Transfer of technology programmes of ICAR - Salient features of ORP, NDS, Lab to Land Programme,

**DEVELOPMENT PROGRAMMES FOR WEAKER SECTIONS:** - Salient features of IRDP, ITDA and JRY. Training of farmers, Farmwomen and youth - Salient features of FTC, KVK and TRYSEM.