SYLLABUS FOR THE RECRUITMENT TO THE POST OF SERICULTURE OFFICERS IN A.P.  
SERICULTURE SERVICE  
PAPER-I: GENERAL STUDIES AND MENTAL ABILITY

1. Events of national and international importance.
2. Current affairs- international, national and regional.
3. General Science and it applications to the day to day life Contemporary developments in Science & Technology and information Technology.
4. Social- economic and political history of modern India with emphasis on Andhra Pradesh.
5. Indian polity and governance: constitutional issues, public policy, reforms and e-governance initiatives with specific reference to Andhra Pradesh.
6. Economic development in India since independence with emphasis on Andhra Pradesh.
7. Physical geography of Indian sub-continent and Andhra Pradesh.
9. Sustainable Development and Environmental Protection
10. Logical reasoning, analytical ability and data interpretation.
11. Data Analysis:  
a) Tabulation of data  
b) Visual representation of data  
c) Basic data analysis (Summary Statistics such as mean, median, mode, variance and coefficient of variation) and Interpretation
1. **GENERAL INTRODUCTION TO SERICULTURE AND ITS DISTRIBUTION IN INDIA.**

   Types of silk produced in India- Status of mulberry and non-mulberry Sericulture in India and at Global level- Economic importance - Scope of Sericulture in India- Employment potential and income generation of sericulture industry- History of Sericulture

2. **MULBERRY CULTIVATION**

   Taxonomy and morphology of mulberry - Mulberry classification - Varieties and their distribution.

   Mulberry cultivation practices under irrigated and rainfed conditions and schedule of package of practices

   Suitable soils- Location and climate for mulberry cultivation

   Mulberry propagation: Sexual and Vegetative propagation

   Cutting: Preparation of Cuttings - Raising of nurseries

   Grafting: Stem - Root - Bud grafting techniques

   Layering: Ground- Air- Trench layering methods

   Planting systems: Row system- Pit system - Paired row system

   Fertilizer schedules for irrigated and raifed mulberry gardens

   Pruning: Objectives and methods

   Harvesting- Transportation - Preservation of mulberry leaves.

3. **DISEASES AND PESTS OF MULBERRY**

   Diseases: General account of mulberry diseases - Foliar diseases - Root diseases - Stem diseases - Causes – Symptoms-Preventive and control measures

   Deficiency diseases – Causes – Symptoms-Preventive and control measures

   Nematodes infesting mulberry- Occurrence- Distribution- Crop loss- Preventive and control measures

   Pests: Leaf hoppers- Scale insects- Mealy bugs- White flies- Hairy caterpillars- Leaf cutters- Termites- Distribution- Signs of attack- Crop losses - Preventive and control measures - Integrated pest management (IPM)

4. **SILKWORM BIOLOGY AND PHYSIOLOGY**


   Physiology of Digestion-Respiration-Circulation-Excretion-Glandular system- Reproduction

5. **PREPARATION FOR SILKWORM REARING**

   Number of cocoon crops per year – Silkworm races - Model rearing house – Different types of rearing houses – Rearing appliances - Sanitation – Importance and methods of disinfection – Different disinfectants – Bed disinfectants

6. **REARING TECHNOLOGIES**

   Chawki Rearing Concept: Procurement silkworm eggs – Incubation – Black Boxing - Brushing of silkworms – Young age silkworm rearing technology - Late age silkworm rearing technology - Cleaning - Spacing - Objectives of spacing – Optimum spacing for different ages – Care during molting - Feeding behavior – Frequency- Preservation and quantity of mulberry leaf – Artificial diet - Environmental factors – Optimum conditions – Devices to control temperature and humidity.


7. **SILKWORM EGG PRODUCTION**

   Marketing of seed cocoons and price fixing- Silkworm seed organization and its significance (bivoltine and multivoltine).

   Grainage operations: Procurement and preservation of seed cocoons- Sex separation- Moth emergence- Matting- Oviposition – Sheet and loose egg preparation - Packing and sale of eggs - Mother moth examination- Surface sterilization of eggs- Acid treatment of hibernating eggs - Embryonic growth - Hibernating (Diapause) eggs- Techniques of cold storage of eggs - Artificial hatching
8. SILKWORM DISEASES
Types of diseases – Etiology – Viral diseases: Nuclear polyhedrosis – Cytoplasmic polyhedrosis – Infectious flacherie – Densonucleosis – Causative agents – Symptomology-Propylactic measures
Bacterial diseases: Bacterial diseases of digestive tract-Bacterial septicemia – Toxicosis – Causative agents- Symptomology- Propylactic measures
Fungal diseases: White muscardine – Types – Causative agents – Life Cycle – Symptomology-Propylactic measures

9. PESTS OF SILKWORM

10. COCOON ASSESSMENT AND PROCESSING TECHNOLOGIES
Cocoon properties-Assessment –Types of defective cocoon - Shell percentage -Shell ratio - Filament length - Denier - Rendilla- Raw silk percentage.
Cocoon stifling/drying- Objectives - Cocoon storage and preservation of cocoon in silk reeling units-Cocoon boiling/cooking-Different methods

11. SILK REELING TECHNOLOGY
Silk reeling: Country charakha- Improved charakha - Cottage basin – Multiend- Semi automatic - Automatic reeling machines - Passage of thread in various reeling machines- Functions of components of reeling machines- Reeling basin- Jettebout-Porcelain button-Croissure- Chambon type and tavellette type- Guide pulley -Tension pulley- Traverse mechanism- Reel- Swift- Reel stop motion- Denier control device-Re reeling

12. SILK TESTING AND SPUN SILK PROCESSING
Raw silk testing- Visual and mechanical tests - Winding test- Size test- Tenacity- Elongation test-Evenness, cleanliness and neatness tests- Cohesion, Testing and grading -Spun silk industry- Raw materials- Processing at different stages of spun silk fibers

13. NON-MULBERRY SERICULTURE
Introduction to Eri, Tasar and Muga culture- Distribution – Classification and Life cycle of Eri, Tasar and Muga- Primary and secondary food plants of Eri, Tasar and Muga silkworms- Geographical distribution - Cocoon production technology – Disinfection – Incubation-Young age silkworm rearing -Late age silkworm rearing- Spinning- Harvesting

14. VALUE ADDED PRODUCTS OF MULBERRY AND SILKWORM
Value-adding Potentials in mulberry: Chemical composition of mulberry leaf and fruit - Nutritional and medicinal values of mulberry –Other uses- value-adding potentials in seed and cocoon production –Nutritional value of Silkworm and silkmoth- Cocoon and silk art craft application - Silkworm as biotechnological and laboratory tool.

15. VALUE ADDED PRODUCTS OF SILK
Types of silk wastes – Spun silk- Noil yarn and its utility - Silkworm pupae as food material and its nutritional value - Pupal oil extraction and its uses-Defective and double cocoons for production of dupion silk- Application of silk protein- Fibroin and sericin as biomaterials- Pharmaceutical- Biomedical application- Cosmetic application
1. PRINCIPLES OF AGRONOMY
Agriculture in India - Indian economy – National income – Per capita income – Agricultural income in GDP - Different agro climatic Zones of India and Andhra Pradesh - Crops and major soils - Classification – Economic and agricultural importance in India and Andhra Pradesh

2. PRINCIPLES OF SOIL SCIENCE
Soils of Andhra Pradesh - Major soil types - Characteristics and their distribution - Problematic soils and their management: Acid and saline soils and methods of reclamation

3. MANURES AND FERTILIZERS
Organic manures and their applications: Farm yard manure - Compost - Vermicompost - Oil cakes, Methods of compost and vermicompost preparations.
Green manuring: Green manure crops and their relevance in soil productivity.
Chemical fertilizers: Classification - Composition - Properties of major Nitrogenous, Phosphatic and potassic fertilizers, Secondary and micronutrient fertilizers, Complex fertilizers, Nano fertilizers.
Foliar nutrition: Foliar nutrient formulations - Mode of applications - Merits and demerits.
Bio fertilizers: Types - Nitrogen - Phosphate - Cellulolytic - Biological nitrogen fixation Importance - Applications and limitations

4. IRRIGATION AND WATER MANAGEMENT
Importance of water - Water resources in India - Water sources - Water quality - Area under irrigation in Andhra Pradesh
Crop water requirements - Water management practices - Methods of irrigation - Suitability - Limitations

5. WEED MANAGEMENT
Harmful effects of weeds - Herbicides - Advantages and limitations of herbicide usage in India - Selectivity of herbicides - Herbicides and their interaction with fertilizer
Preventive and control methods: Physical - Chemical - Biological weed management techniques, Integrated weed management

6. STRUCTURAL ORGANIZATION OF PLANT CELLS
Ultra structure of plant cell - Structure of cell organelles and function
Tissue systems in plants – Origin - Structure, and function of simple and complex tissues, Cell cycle - Mitosis and Meiosis

7. PHOTOSYNTHESIS
Structure and function of Chloroplast - Photosynthetic pigments and their characteristics - Photosynthetic carbon assimilation in C3, C4 and CAM Plants - Photorespiration - Mechanism and regulation

8. RESPIRATION
Glycolysis - Tricarboxylic Acid Cycle (TCA cycle) - Electron transport - Pentose phosphate pathway - Mechanism and Significance

9. PLANT DEVELOPMENT AND GROWTH REGULATORS
Pattern of plant growth and development - Growth kinetics - Morphogenesis - Principles of differentiation
Natural and Synthetic growth regulators: Auxins - Gibberelins - Cytokinins - Abscisic acid - Ethylene - Brassino steroids - Polyamines - Jasmonic acid - Salicylic acid

10. PLANT TISSUE CULTURE
Preparatory techniques – Cleaning - Sterilization - Media - Types and Composition, Callus - Growth pattern/characteristics, Organogenesis and plant regeneration, Acclimatization
Somatic embryogenesis-Anther- Endosperm- Pollen cultures-Significance and advantages of haploid plants- Production of virus-free plants.

11. STRUCTURAL ORGANIZATION OF ANIMAL CELLS
Cell Membrane structure and function - Structural organization and function of intracellular organelles: Cytoplasm - Nucleus - Mitochondria- Endoplasmic reticulum - Golgi apparatus- Ribosomes - Lysosomes - Peroxisomes -Vacuoles - Structure and function of cytoskeleton and its role in motility
Cell division and cell cycle

12. ANIMAL PHYSIOLOGY
Digestion: Functional anatomy of digestive system - Digestion and digestive secretions - Absorption – Assimilation
Nervous system – Neurons- Action potential - Gross neuroanatomy of the brain and spinal cord- Central and peripheral nervous system- Neural control of muscle tone and posture - Sense organs.
Excretory system - Physiology of excretion - Formation of nitrogenous excretory products - Ammonia - Urea - Uric acid - Waste elimination -Regulation of water balance

13. BIOMOLECULES
Carbohydrates: Structure- Properties - Classification - Pathways of metabolism of glucose- Glycogenesis- Glycogenolysis- Glycolysis-Citric acid cycle- Gluconeogenesis- HMP pathway- Uronic acid pathway
Proteins: Structure- Classification and properties -Aminoacids- Structure- Classification and properties
Lipids: Structure-Chemical nature-Classification- Biological functions
Nucleic acids: Types - Functions - Structure of DNA and RNA - DNA synthesis RNA synthesis (Transcription) - Protein synthesis (Translation)

14. ENVIRONMENTAL BIOLOGY
General account on biomes and their environment
Fresh water: Classification and characteristics of freshwater bodies-Eutrophication-Seasonal changes
Marine: Classification and Characteristics- Shores and Estuaries
Ecology: Components of an Ecosystem - Tropic levels - Food chain and food web - Energy flow in ecosystem.

15. ENVIRONMENTAL POLLUTION