UNIVERSITY OF MYSORE
Syllabus for Ph.D. Entrance Exam
SERICULTURE

Units	Syllabus
1.	Introduction to Sericulture: History and status of mulberry and non-mulberry sericulture in India. Silk production in India and other countries; export and import. Scope of sericulture in India vis-à-vis other agricultural crops, employment potential and income generation, role of women in sericulture. Sericulture organization and extension in India.
2.	Structure, organization and functions of cell organelles. Cell cycle and regulation. Structure and organization of chromatin. Special chromosomes. Structure and chemistry of nucleic acids. Classification and synthesis of protein. Genetic code.
3.	Principles and methods of plant breeding. Host plants of mulberry and non-mulberry silkworms. Botanical description and systematics of genus *Morus*. Mulberry cultivars - tropical and temperate regions, irrigated and rainfed conditions. Anatomy of mulberry leaf, stem and root. Reproductive biology of mulberry.
4.	Mulberry propagation and cultivation. Soils for mulberry cultivation - Soil profile and classification. Physical, chemical and biological properties of soils. Establishment and maintenance of mulberry gardens. Package of practices. Pests and diseases of mulberry and their management. Plant nutrition.
5.	Classification and characteristic features of insects; classification of sericigenous insects; characteristic features of order Lepidoptera. Metamorphosis in insects. Silkworm respiratory, digestive, circulatory, excretory and nutrition physiology. Neuroendocrine system in insects.
6.	Classification of silkworms. Morphology and life cycle of mulberry and non- mulberry silkworms. Anatomical features of *Bombyx mori*. Gametogenesis and embryonic development of *B. mori*. Silkworm seed organization and its significance. Process of silkworm egg production.
7.	Silkworm rearing: Planning for silkworm rearing, rearing houses and equipments, disinfection and hygiene and incubation. Young and late-age silkworm rearing - Qualitative and quantitative requirements of mulberry leaves, bed spacing, cleaning, moulting, mounting and environmental condition. Cocoon harvesting and marketing. Pests and diseases of silkworm and their management.
8.	Principles and methods of animal breeding. Silkworm breeding, new concepts of silkworm breeding, biochemical genetics and breeding. Hereditary traits of *B. mori* - egg, larva, cocoon, pupa and moth.
9.	Textile fibers – synthetic and natural. Insect and non-insect fauna producing silk. Types of silk produced in India. Physical and commercial characteristics of cocoons. Cocoon sorting, stifling and cooking. Silk reeling - charaka, cottage basin, multi-end, automatic and semi-automatic. Silk testing and grading. Cocoon markets and silk exchanges. Wet processing and weaving.
10.	Methods and application of plant tissue culture. Animal cell culture and its application. Transgenic plant and animals. Tools and techniques of molecular biology.