PAPER-6:- SILKWORM SEED PRODUCTION AND BIOTECHNOLOGY 3 hrs/week X 15 = 48 hrs.

Part-A: Silkworm seed production.

Unit-1

1. A general account of silkworm seed, grainages, production and demand trends. 2 Hrs.
2. Silkworm seed organisation, significance of seed organization; Basic seed multiplication centres- P4, P3, P2 and P1; Seed areas- identification, concept of selected seed rearers/ villages- Seed Legislation Act- maintenance of seed crops. Seed cocoon markets- pupal examination, certification of seed cocoon lots- price fixation for seed cocoons. 6 Hrs.

Unit-2

3. Disinfection and hygiene in seed production units. 2 Hrs.
4. Seed production centres (grainages)- types of grainages- organisation and functions of grainages- plan for model grainage- grainage equipments and their use - Seed production plan. 3 Hrs.
5. Procurement and transportation of seed cocoons- processing and preservation of seed cocoons- sex separation in seed cocoons. 2 Hrs.

Unit-3

6. Moth emergence and synchronisation; sex separation in moth; effect of improper synchronisation on egg hatching and quality-safe duration. 2 Hrs.
7. Coupling and decoupling; oviposition; method of egg production; refrigeration of male moths; mother moth examinations- individual and mass methods- dry moth examination; environmental conditions for grainage activity. 2 Hrs.
8. Egg disinfection- handling of multivoltine eggs- preservation of eggs to postpone hatching- ideal embryonic stages for cold storage- maximum duration of cold storage. 2 Hrs.

Unit-4

9. Handling of bivoltine eggs for early hatching- physical and chemical methods- hot and cold acid treatment. 2 Hrs.
10. Postponement of hatching; hibernation schedule for 3, 4, 6 and 10 month's duration. 3 Hrs.
11. Preparation of loose egg- advantages- handling of loose eggs; Incubation of eggs. 2 Hrs.

Part –B: Biotechnology;

Unit-5

12. Nucleic acids: Introduction- chemical structure of DNA and RNA- Watson and Crick model of DNA- Types of RNA- tRNA, mRNA and rRNA- DNA replication. 5 Hrs.
13. Protein synthesis: Synthesis of mRNA, RNA polymerase- polyribosomes- translation. Genetic code- salient features. 4 Hrs.

Unit-6

14. Introduction to recombinant DNA technology. 3 Hrs.

15. Brief account of tissue culture and morphogenesis; Its applications in crop improvement. 4 Hrs.
16. Brief account of genetic engineering- concept and technique. Applications in sericulture. 4Hrs.

tical VI- SILKWORM SEED PRODUCTION/... 2hours/weekX14 practicals = ...

kworm **Seed production;** 1 Prct.

Model grainage plan and Grainage equipments.
Seed cocoon processing/handling- deflossing, sorting and preservation- pupal examination and Sex separation of pupa and moth. Moth emergence- selection of moths-pairing and de-pairing- oviposition- preservation of male moths- preparation of disease free layings- sheet egg and loose egg preparation. Mother moth examination for Pebrine spores- Individual and Mass moth examination- surface disinfection of silkworm eggs. 3 prct.
Acid treatment of bivoltine eggs- hot acid and cold acid treatment. & Incubation of eggs-Visit to cold storage to know preservation and handling of hibernated eggs 3 Prct.
for 3, 4, 6 and 10 month hibernation schedules. 2 Prct.
. Tissue culture technique (Demonstration and/visit to any research institute). 3 Prct.
. Extraction of DNA from plant and animal sources 2 Prct.
. Quantification of DNA by Spectrophotometer/DPA method.

VI SEMESTER

3 hrs/week X 15 = 48 hrs.

PAPER-VII: SILK TECHNOLOGY

Unit-1

1. Introduction to different textile fibres. 2 Hrs.
2. Physical and commercial characteristics of cocoons: cocoon colour, shape, size, hardness, grain/wrinkle, weight of cocoon, weight of cocoon shell, shell ratio. 2 Hrs.
3. Cocoon marketing- Procedure for procurement of raw material- purchase of cocoon in open auction; grading of cocoons- visual inspection and selection. 2 Hrs.
4. Cocoon sorting: Objectives and procedure; defective cocoons- double, flimsy, melted, urinated, stained, uzi-infested, moth emerged, deformed and flossy. 2 Hrs.

Unit-2

5. Cocoon stifling: Definition, objectives, different methods-conventional and modern techniques- steam stifling. Hot air drying- Batch type and conveyer type; advantages and disadvantages. 3 Hrs.
6. Conditioning and preservation- Methods of storing and preservation of stifled cocoons. 1 Hrs.
7. Cocoon cooking/boiling: Definition and objectives, different methods of cocoon boiling- Mono pan, three pan and pressurized cocoon boiling methods. 2 Hrs.
8. Cocoon brushing: Definition and objectives; methods- stick, hand and mechanical brushing. 2 Hrs

Unit-3

9. Reeling water; quality required for silk reeling, total and permanent hardness, optimal pH; corrective measures. 3 Hrs.
10. Reeling: Objective and cocoon reeling from various devices-country charaka, cottage basin, multi end reeling machine, auto and semi-automatic, improved CSTRI reeling devices; advantages and disadvantages. 3 Hrs.
11. Re-reeling and packing: Objectives, process; lacing, skeining, booking and baling. 2 Hrs.

Unit-4

12. Raw silk properties- physical, chemical and biological. Uses of raw silk- Textile and other commercial uses. 2 Hrs.

13. Raw silk testing and grading; Visual inspection. Mechanical tests- winding test, size deviation test, seriplane test, serigraph test and cohesion test. Supplementary tests- conditioning weight, scouring loss, exfoliation tests. 4 Hrs.
14. Silk throwing: Introduction, objectives of silk throwing, preparation for twisting,