



DEPARTMENT OF SERICULTURE

TUMKUR- 572103

SYLLABUS FOR V AND VI SEMESTER

B.SC., SERICULTURE

UNDERGRADUATE (UG) PROGRAMME

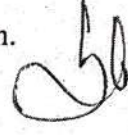
**FRAMED ACCORDING TO STATE EDUCATION POLICY
(SEP) 2024**

MAY -2026

PROCEEDINGS OF THE MEETING OF BOARD OF STUDIES IN SERICULTURE HELD
ON 23RD, 29TH, & 30TH MAY 2026 IN TUMKUR UNIVERSITY, TUMAKURU

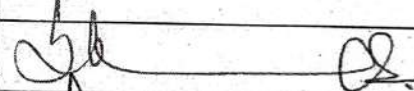
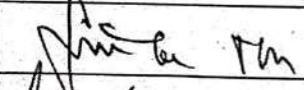
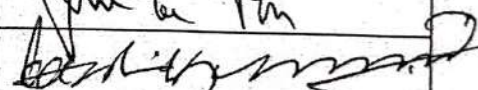
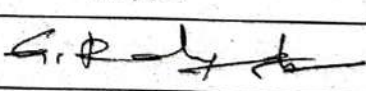
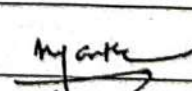
MINUTES OF THE BOS MEETING

1. The Meeting began with the welcome address by the Chairperson. The agenda was placed in the meeting for discussion and decision.
2. Discussed and finalized the SEP syllabus for V and VI Semester B.Sc. Sericulture (both theory & practical).
3. Question paper pattern for both theory & practical and Scheme of evaluation for practical's has been discussed and finalized
4. Formative and Summative assessment for both theory & practical's has been discussed and finalized.
5. Syllabus for two Skill enhancement papers for both theory & practical, along with question paper pattern for both has been discussed and finalized
6. The Board has authorized the Chairperson to incorporate corrections if there are any, in case of exigencies.
7. The meeting ended with a vote of thanks by the Chairperson.


Chairperson
ಶಾಲಿನಿ ಬಿ.ಆರ್.
ಅಧ್ಯಕ್ಷರು

Members of the Board of Studies

ಸಸ್ಯಶಾಸ್ತ್ರ ಸ್ನಾತಕ ಅಧ್ಯಯನ ಮಂಡಳಿ
ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ

SL No.	Name of the Members	Designation	Signature of the Members
1.	Prof. Shalini B. R.	Chairman	
2.	Dr. M. N. Sreenivasa	Member	
3.	Dr. L. H. Shivashankarappa	Member	
4.	Dr. Rohith. L. Shankar	Member	Absent
5.	Dr. Rahamathulla G.	Member	
6.	Dr. H. B. Mahesh	Member	Absent
7.	Dr. R. S. Umakanth	Member	


Chairperson
ಶಾಲಿನಿ ಬಿ.ಆರ್.
ಅಧ್ಯಕ್ಷರು
ಸಸ್ಯಶಾಸ್ತ್ರ ಸ್ನಾತಕ ಅಧ್ಯಯನ ಮಂಡಳಿ
ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ

TUMKUR UNIVERSITY
SERICULTURE V SEMESTER [SEP 2026-27]
PAPER V: Cytogenetics and Breeding of Mulberry and Silkworm

Programme	B. Sc (Sericulture)
Course Title	Paper V: Cytogenetics and Breeding of Mulberry and Silkworm
Course code	SERT501
Total Hours of Teaching	45
Number of Teaching Hours /Week	3 Hours
Number of Credits	3
Formative Assessment	20
Summative Assessment	80

SERICULTURE - V SEMESTER

PAPER V: CYTOGENETICS AND BREEDING OF MULBERRY AND SILKWORM

Unit-I		
1.	Ultra-structure of eukaryotic cell.	1 hrs.
2.	Ultra-structure of chromosomes; Special types of chromosomes-lamp brush and salivary Gland chromosomes.	3 hrs.
3.	Cell division; Mitosis and Meiosis.	3 hrs.
4.	Brief account of polyploidy in plants-polyploidy in mulberry.	2 hrs.
5.	Chromosomal aberration-Deletion, duplication, inversion and translocation.	2 hrs.
Unit-II		
6.	Mutation-Types; mutagens; physical and chemical mutagenesis. Mulberry mutants.	3 hrs.
7.	Germplasm bank: Importance; collection, characterization and maintenance.	2 hrs.
8.	Anther and ovule in mulberry; micro-and megasporogenesis; development to female and female gametophytes; pollination, fertilization; development of endosperm, embryo and seed; Polyembryony and parthenocarpy in mulberry.	3 hrs.
9.	Plant introduction and acclimatization; Quarantine.	2 hrs.
10.	Mulberry breeding: Objectives; selection methods.	1 hr.
Unit-III		

11.	Hybridization technique and selection.	2 hrs.
12.	Polyploidy breeding and Mutation breeding.	2 hrs.
13.	Breeding for disease and Drought resistance.	2 hrs.
14.	Evaluation of selected genotypes and release of improved varieties.	2 hrs.
15.	Silkworm germplasm bank.	1 hrs.
16.	Structure and chromosome numbers in mulberry and non-mulberry silkworms-evolutionary Significance of chromosomes in <i>Bombyx mori</i> . Linkage groups in <i>Bombyx mori</i> .	3 hrs.
Unit-IV		
17.	Sex determination mechanism in silkworm –importance of ZZ and ZW chromosomes- sex-limited races. Parthenogenesis in silkworm.	1 hrs.
18.	Gametogenesis - Oogenesis and Spermatogenesis	2 hrs.
19.	Genetic basis of voltinism and moultnism in the silkworm, <i>Bombyx mori</i>	1 hrs.
20.	Introduction to silkworm breeding- inbreeding and out breeding concepts- objectives of silkworm breeding. Different types of breeding methods- line breeding, cross breeding and mutation breeding.	2 hrs.
21.	Hereditary traits of silkworm egg, larva, pupa and adult.	1 hr.
22.	Genetics of cocoon colours – inheritance of cocoon colours.	1 hr.
23.	Selection Methods of selection. Fixation of characters-evolution of new breeds- Race authorization.	2 hr.
24.	Heterosis / hybrid vigour-exploitation of heterosis in silkworm-concept of single, double and polyhybrids.	2 hrs.

Formative Assessment for Theory		
Components for IA	Marks Assigned	Total
Assignment – No. 1	5	20
Test – No. 1	5	
Assignment – No. 2	5	
Test – No. 2	5	
Summative Assessment		
Semester End Theory Examination	80	80
Total		100

SERICULTURE V SEMESTER
PAPER V: CYTOGENETICS AND BREEDING OF MULBERRY AND SILKWORM
Model Question Paper for Theory Examination

Time: 3 Hours

Max Marks: 80

Instructions: Draw neat labelled diagrams wherever necessary

Section-A

I. Answer any TEN of the following

10x2=20

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

Section-B

II. Answer any SIX of the following

6X5=30

- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.

Section-C

III. Answer any THREE of the following

3X10=30

- 19.
- 20.
- 21.
- 22.

SERICULTURE - V SEMESTER

PAPER VI: SILKWORM SEED TECHNOLOGY AND SERICULTURE EXTENSION

Programme	B.Sc (Sericulture)
Course Title	Paper VI: SILKWORM SEED TECHNOLOGY AND SERICULTURE EXTENSION
Course code	SERT502
Total Hours of Teaching	45
Number of Teaching Hours /Week	3 Hours
Number of Credits	3
Formative Assessment	20
Summative Assessment	80

PAPER VI: SILKWORM SEED TECHNOLOGY AND SERICULTURE EXTENSION

Unit-I		
1.	Developmental biology: Morphology and structure of silkworm egg, fertilization, cleavage, blastoderm, germ band formation, blastokinesis, eye spot and blue egg; diapause development.	3 hrs.
2.	A general account of silkworm seed, grainages, production and demand trends.	2 hrs.
3.	Silkworm seed organization, significance of seed organization; Basic seed multiplication centres-P4, P3, P2 and P1; Seed areas- identification; concept.	3 hrs.
4.	Concept of selected seed rearers/Adopted seed rearers/ villages-Seed Legislation Act-maintenance of seed crops.	3 hrs.
Unit-II		
5.	Seed cocoon markets- pupal examination, certification of seed cocoon lots-price fixation for seed cocoons.	2 hrs.
6.	Disinfection and hygiene in seed production units.	2 hrs.
7.	Seed production centres (grainages)- types of grainages- organization and functions of grainages.	2 hrs.
8.	Plan for model grainage- grainage equipments and their use-Seed production plan.	2 hrs.
9.	Procurement and transportation of seed cocoons-processing and preservation of seed cocoons-sex separation in seed cocoons.	2 hrs.
10.	Moth emergence and synchronisation; sex separation in moth; effect of improper synchronization on egg hatching and quality-safe duration.	2 hrs.

Unit-III		
11.	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.	3 hrs.
12.	Egg disinfection - handling of multivoltine eggs- preservation of eggs to postpone hatching - ideal embryonic stages for cold storage - maximum duration of cold storage. Handling of bivoltine eggs for early hatching- physical and chemical methods-hot and cold acid treatment.	2 hrs.
13.	Postponement of hatching; hibernation schedule for 3, 4, 6 and 10 month's duration.	2 hrs.
14.	Preparation of layings and loose egg- advantages- handling of loose eggs; Incubation of eggs.	2 hrs.
15.	Incubation of eggs- methods, environmental conditions required for incubation, postponement of Hatching of eggs by temporary consignment.	1 hr.
16.	Grainage management- Role of LSPs. Byproducts of grainage and their utilization.	1 hr.
Unit-IV		
17.	Extension education - meaning, objectives and importance. Principles and concepts of extension education.	3 hrs.
18.	Extension programmes-concepts and principles, role of extension personnel and Farmers in programme planning Transfer of technology.	2 hrs.
19.	Communication-definition and planning- types of communication.	2 hrs.
20.	Training- concepts and definition- different methods of training.	2 hrs.
21.	TSC's and Co-operative chawki rearing centers: Role and Importance.	2 hrs.

Formative Assessment for Theory		
Components for IA	Marks Assigned	Total
Assignment – No. 1	5	20
Test – No. 1	5	
Assignment – No. 2	5	
Test – No. 2	5	
Summative Assessment		
Semester End Theory Examination	80	80
Total		100

SERICULTURE - V SEMESTER
PAPER VI: SILKWORM SEED TECHNOLOGY AND SERICULTURE EXTENSION
Model Question Paper for Theory Examination

Time: 3 Hours

Max Marks: 80

Instructions: Draw neat labelled diagrams wherever necessary

Section-A

I. Answer any TEN of the following

10x2=20

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

Section-B

II. Answer any SIX of the following

6X5=30

- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.

Section-C

III. Answer any THREE of the following

3X10=30

- 19.
- 20.
- 21.
- 22.

SERICULTURE - V SEMESTER

Practical SERP 503: CYTOGENETICS, BREEDING OF MULBERRY, SILKWORM SEED TECHNOLOGY AND SERICULTURE EXTENSION

PRACTICAL

14 Practicals

Sl. No.	Name of the Experiment	No. of Practicals
1.	Mulberry germplasm and mulberry multi locational trials.	1 Prac.
2.	Evaluation of breeding parameters in different mulberry varieties.	1 Prac.
3.	Study of mitosis in onion root tip/mulberry root tip. Study of meiosis in grasshopper / silkworm testis.	2 Prac.
4.	Mulberry breeding equipments, hybridization technique in mulberry.	2 Prac.
5.	Identification of different races of silkworm cocoons-NB4D2, KA, PM, C. nichii, Nistari, CSR ₂ and CSR ₄ races/breeds and their characters.	1 Prac
6.	Identification of mutants of silkworm larva-zebra, ursa, knobbed and sex-limited Races.	1 Prac.
7.	Comparative assessment of the hybrids and pure race cocoons. Estimation of inbreeding depression.	1 Prac.
8.	Model grainage building plan and Grainage equipments.	1 Prac.
9.	Moth emergence and synchronisation, sex separation, synchronisation-safe duration. Coupling and decoupling and oviposition.	1 Prac.
10.	Pupa and Mother moth examination for Pebrine spores- Individual and Mass moth examination- surface disinfection of silkworm eggs. Preservation and handling of hibernated eggs for 3, 4, 6 and 10 month hibernation schedules. (Field visit)	1 Prac
11.	Acid treatment of bivoltine eggs- hot acid and cold acid treatment. Incubation of acid treated eggs-Calculation of hatching percentage.	1 Prac.
12.	Preparation of audio visual aids-charts. Preparation of handouts, pamphlets and preparations for film shows.	1 Prac.

Method of assessment for practical

Formative assessment		
Components for IA	Marks Assigned	Total
Practical test	10	10
Summative assignment		
Semester end practical examination	40	40
Total		50

SERICULTURE - V SEMESTER

QUESTION PAPER WITH SCHEME OF PRACTICAL EVALUATION

Practical SERP503: CYTOGENETICS, BREEDING OF MULBERRY, SILKWORM SEED TECHNOLOGY AND SERICULTURE EXTENSION

Duration – 3 hours

Max Marks: 40

Q1.	Temporary squash preparation of mitotic/ meiotic chromosomes Onion root tip/ silkworm testis. Note: Distribution of marks a) Procedure - 2M b) Staining and preparation of chromosomes – 3M c) Identification of stages - 2M d) Labelled diagram - 3M	10 marks
Q2.	Assessment of cocoons of pure races for cocoon weight, shell weight and other racial Characters/ Estimation of heterosis/ inbreeding depression. Note: Distribution of marks a) Procedure – 4M b) Experiment - 6M	10 marks
Q3.	Evaluation of breeding parameters of different mulberry varieties/ mulberry hybridization experiments. Note: Distribution of marks a) Procedure – 2M b) Experiment - 3M	5 Marks
Q4.	Submission of handouts/ pamphlets/ Charts.	5 Marks
Q5.	Identify and comment on the spots A, B, C and D. Note: Distribution of marks A, B, C, D: Any FOUR from the practical syllabus. (2.5 Marks Each)	10 Marks

SERICULTURE - V SEMESTER

SEC Paper I: Innovations in Sericulture Technology

Programme	B.Sc. (Sericulture)
Course Title	Paper: Innovations in Sericulture Technology
Course code	SER SEC -I
Total Hours of Teaching	15 for theory and 30 for practicals
Number of Teaching Hours /Week	1 Hour for theory and 2 hrs for practicals
Number of Credits	1 for theory and 1 for practicals
Formative Assessment	10
Summative Assessment	40

SEC Paper: Innovations in Sericulture Technology

Unit-1 (Theory) 1 Hours per week		Total 15 hours
1.	Modern Innovations in Mulberry and Silkworm Production: Introduction to modern sericulture and recent technological developments.	2 hrs.
2.	Improved mulberry varieties and nursery techniques.	1 hrs.
3.	Modern methods of irrigation, fertilization and leaf harvesting.	1 hrs.
4.	Chawki rearing technologies and environmental control in silkworm rearing.	2 hrs.
5.	Use of disinfectants, bed cleaning equipment and improved rearing appliances.	2 hrs.
6.	Integrated pest and disease management in mulberry and silkworm.	1 hrs.
7.	Modern cocoon harvesting and preservation techniques.	1 hrs.
8.	Introduction to automatic silk reeling and spinning methods.	1 hr.
9.	Silk testing, grading and quality improvement techniques.	1 hrs.
10.	Value addition in silk products and by-products.	1 hrs.
11.	Digital marketing, entrepreneurship opportunities and government schemes in sericulture.	1 hrs.
12.	Sustainable and eco-friendly technologies in sericulture.	1 hrs.
Unit – 2 (Practical) 2 Hours per week		Total 30 hours
13.	Identification of improved mulberry varieties.	
14.	Demonstration of modern rearing appliances and disinfectants.	

15.	Observation of pest and disease symptoms in mulberry and silkworm.	
16.	Visit to reeling unit or grainage centre.(field visit)	
17.	Cocoon grading and quality observation.	
18.	Preparation of simple value-added silk products or charts/models.	
19.	Preparation and application of botanical pesticides/neem extract for pest management.	
20.	Preparation of simple cost and profit analysis for silkworm rearing or cocoon production.	

Method of assessment for practical

Formative assessment		
Components for IA	Marks Assigned	Total
Practical test	10	10
Summative assessment		
Semester end examination	40	40

***Note:** 1. No separate practical exam.

2. Practical syllabus must be covered in theory question paper.

SERICULTURE - V SEMESTER
SEC PAPER I: Innovations in Sericulture Technology
Model Question Paper for Theory Examination

Time: 1½ Hours

Max Marks: 40

Instructions: Draw neat labelled diagrams wherever necessary

Section-A

I. Answer any FIVE of the following

5x2=10

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Section-B

II. Answer any FOUR of the following

4X5=20

- 7.
- 8.
- 9.
- 10.
- 11.

Section-C

III. Answer any ONE of the following

1X10=10

- 12.
- 13.

SERICULTURE - VI SEMESTER
PAPER VII: SILK TECHNOLOGY

Programme	B.Sc (Sericulture)
Course Title	Paper VII: SILK TECHNOLOGY
Course code	SERT601
Total Hours of Teaching	45
Number of Teaching Hours /Week	3 Hours
Number of Credits	3
Formative Assessment	20
Summative Assessment	80

PAPER VII: SILK TECHNOLOGY

Unit-I		
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.
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.
Unit-II		
7.	Cocoon cooking / boiling: Definition and objectives, different methods of cocoon boiling monopan, three pan and pressurized cocoon boiling methods.	1 hrs.
8.	Cocoon brushing: Definition and objectives; methods-stick, hand and mechanical brushing.	2 hrs.
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.	3hrs.
11.	Re-reeling and packing: objectives, process; lacing, skeining, booking and baling. Silk exchange, KSMB and KSIC.	2hrs.
Unit-III		
12.	Raw silk properties- physical, chemical and biological. Uses of raw silk- Textile and Other commercial uses.	1 hrs.
13.	Raw silk testing and grading; Visual inspection. Mechanical tests- winding test, size deviation test, scriplane test, serigraph test and cohesion test. Supplementary tests-conditioning weight, scouring loss, exfoliation tests.	3 hrs.
14.	Silk throwing: Introduction, objectives of silk throwing, preparation for twisting, soaking, winding, doubling, twisting (high&low), heat/steam setting, rewinding.	3 hrs.
15.	Silk weaving: Warp preparation- warp, beaming, drawing and denting. Weft preparation-different pirn winding methods. Powerloom and hand loom weaving. Flowchart of weaving; weaving defects.	3 hrs.
Unit-IV		
16.	Chemical processing of silk yarns and fabric: Introduction and objectives of degumming-Methods. Silk bleaching- Importance and processing. Silk dyeing-Acidic and basic dyeing processing. Introduction of different classes of dyes and chemicals used for silk dyeing.	3 hrs.
17.	Detailed study of spun silk industry- various steps involved , flowchart, spun silk yarn and noil yarn.	2 hrs.
18.	Printing of silk fabrics: Objectives, methods- hand and screen-printing.	2 hrs.
19.	Silk finishing: Objectives, methods- Mechanical and chemical finishing.	2 hrs.
20.	Introduction to by-products of sericulture industry, by-product utilization in mulberry; Types of silk waste and pupal waste-oil extraction and cake preparation.	3 hrs.

Formative Assessment for Theory		
Components for IA	Marks Assigned	Total
Assignment – No. 1	5	20
Test – No. 1	5	
Assignment – No. 2	5	
Test – No. 2	5	
Summative Assessment		
Semester End Theory Examination	80	80
Total		100

SERICULTURE - VI SEMESTER
PAPER VII: SILK TECHNOLOGY
Model Question Paper for Theory Examination

Time: 3 Hours

Max Marks: 80

Instructions: Draw neat labelled diagrams wherever necessary

Section-A

I. Answer any TEN of the following

10x2=20

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

Section-B

II. Answer any SIX of the following

6X5=30

- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.

Section-C

III. Answer any THREE of the following

3X10=30

- 19.
- 20.
- 21.
- 22.

SERICULTURE - VI SEMESTER

PAPER VIII: NON-MULBERRY SERICULTURE AND ECONOMICS

Programme	B.Sc (Sericulture)
Course Title	Paper VIII: NON-MULBERRY SERICULTURE AND ECONOMICS
Course code	SERT602
Total Hours of Teaching	45
Number of Teaching Hours /Week	3 Hours
Number of Credits	3
Formative Assessment	20
Summative Assessment	80

PAPER SERT602: NON-MULBERRY SERICULTURE AND ECONOMICS

Unit-I		
1.	Types of non-mulberry silkworms and their distribution in India and other countries.	3 hrs.
2.	Taxonomy of food plants of non-mulberry silkworms: Study of salient features of the families, Magnoliaceae, Caesalpiniaceae, Euphorbiaceae, Combretaceae, Apocyanaceae, (giving more emphasison the plants of Sericultural importance)	6 hrs.
3.	Cultivation of primary food plants of tasar, muga, and eri silkworms- <i>Terminalia arjuna</i> , <i>Machilus bombycina</i> , <i>Ricinus communis</i> and their systematic position.	4 hrs.
Unit-II		
4.	Life cycle of Tasar, Eri and muga silkworms.	3 hrs.
5.	Brief account of important diseases and pests of primary non-mulberry food plants and their management.	3 hrs.
6.	Rearing of non-mulberry silkworms. Ecological conditions that influence rearing of non- mulberry silkworms- improved rearing methods for young and late age tasar, eri and muga silkworms. Mounting methods-different kinds of mountages rearing of seed and Commercial crops- Indoor rearing of tropical tasar and muga silkworms.	5 hrs.

Unit-III		
7.	Seed cocoons- Procurement- cocoon preservation-synchronization of moth emergence-production of disease free eggs.	4 hrs.
8.	Diseases of non-mulberry silkworms- protozoan, bacterial, viral and fungal diseases. Symptoms- causative agents- preventive and control measures.	5 hrs.
Unit-IV		
9.	Farm management: Concept, decisions and farm records.	3 hrs.
10.	Economics of mulberry production: Costs and returns under irrigation and rainfed condition.	3 hrs.
11.	Economics of silkworm egg production and rearing : Expenditure and income.	3 hrs.
12.	Economics of silk reeling (per kg of raw silk): Cost and returns for different types of Reeling establishments.	3 hrs.

Formative Assessment for Theory		
Components for IA	Marks Assigned	Total
Assignment – No. 1	5	20
Test – No. 1	5	
Assignment – No. 2	5	
Test – No. 2	5	
Summative Assessment		
Semester End Theory Examination	80	80
Total		100

SERICULTURE VI SEMESTER
PAPER VIII: NON-MULBERRY SERICULTURE AND ECONOMICS
Model Question Paper for Theory Examination

Time: 3 Hours

Max Marks: 80

Instructions: Draw neat labelled diagrams wherever necessary

Section-A

I. Answer any TEN of the following

10x2=20

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

Section-B

II. Answer any SIX of the following

6X5=30

- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.

Section-C

III. Answer any THREE of the following

3X10=30

- 19.
- 20.
- 21.
- 22.

SERICULTURE - VI SEMESTER

PRACTICAL SERP 603: SILK TECHNOLOGY, NON-MULBERRY SERICULTURE AND ECONOMICS

PRACTICAL

14 Practicals

Sl. No.	Name of the Experiment	No. of Practicals
1.	Categorization of different types of cocoons- good and defective cocoons- Calculation of percentage of each type.	1 Prac.
2.	Reeling water: Determination of total and permanent hardness, alkalinity and pH.	1 Prac.
3.	Cocoon cooking- different methods.	1 Prac.
4.	Determination of commercial characters of cocoon-average cocoon weight, shell weight, shell percentage or shell ratio, average filament length, reelability, raw silk recovery percentage, renditta and denier; reeling on epprouvette.	1 Prac.
5.	Study of charaka, cottage basin, multi- end silk reeling machine, automatic and semi-automatic Reeling machine- practical demonstration.(Visit to private reeling unit and filature).	2 Prac
6.	Degumming of raw silk by soap & soda wash method and estimation of sericin and Fibroin percentage.	1 Prac.
7.	Bleaching of silk fibres.	1 Prac.
8.	Silk dyeing to obtain different shades using acid dye stuff.	1 Prac.
9.	Identification of different types of silk waste; floss, cooker, reeler, basin refuse and re-reeling waste, dupion silk	1 Prac.
10.	Morphology and taxonomic description of primary primary/secondary/tertiary food plants of non-mulberry silkworms.	1 Prac.
11.	Life cycle and morphology of non-mulberry silkworms.	1 Prac
12.	Rearing of non mulberry silkworms. Diseases and pests of vanya silkworms.	1 Prac.
13.	Estimation of economics for silkworm rearing in shelf and shoot method of rearing with respect to cross breed, single hybrid and double hybrid silkworm breeds.	1 Prac.

Method of assessment for practical

Formative assessment		
Components for IA	Marks Assigned	Total
Practical test	10	10
Summative assessment		
Semester end practical examination	40	40
Total		50

VI SEMESTER
QUESTION PAPER WITH SCHEME OF PRACTICAL EVALUATION

PAPER SER603: SILK TECHNOLOGY, NON-MULBERRY SERICULTURE AND ECONOMICS

Duration: 3hours

Max. Marks: 40

Q1.	Identification, sorting and percentage determination of different types of cocoons/ Estimation of shell weight, shell %/ Determination of total alkalinity/ Water pH. Note: Distribution of marks a) Procedure – 4M b) Experiment - 6M	10 marks
Q2.	Estimation of filament length /reelability/ raw silk % recovery/ renditta/ denier (any two) From the given cocoons. Note: Distribution of marks a) Procedure – 4M b) Experiment - 6M	10 Marks
Q3.	Describe the given plant taxanomically. Note: Distribution of marks a) Description – 4M b) Identification - 1M	5 marks
Q4.	Identify the given silkworm Note: Distribution of marks a) Identification - 1M b) Classification – 1M c) Description – 3 M	5 Marks
Q.5	Identify and comment on the spots A, B, C and D. Note: Distribution of marks A, B, C, D: Any FOUR from the practical syllabus. (2.5 Marks Each)	10 Marks

SERICULTURE - VI SEMESTER

SEC Paper-II: Entrepreneurship Development in Sericulture

Programme	B.Sc (Sericulture)
Course Title	Paper: Entrepreneurship Development in Sericulture
Course code	SER SEC-2
Total Hours of Teaching	15 for theory and 30 for practicals
Number of Teaching Hours /Week	1 Hour for theory and 2 hrs for practicals
Number of Credits	1 for theory and 1 for practicals
Formative Assessment	10
Summative Assessment	40

Unit-I (Theory) 1 Hour per week		Total 15 hours
1.	Introduction to entrepreneurship and entrepreneur.	1 hrs.
2.	Characteristics and qualities of a successful entrepreneur.	1 hrs.
3.	Scope and opportunities in sericulture entrepreneurship.	1 hrs.
4.	Sericulture-based enterprises: Mulberry nursery ,Mulberry cultivation ,Silkworm rearing ,Grainage ,Silk reeling and weaving and Silk-based value-added products	1 hrs.
5.	Role of entrepreneurship in rural development and employment generation.	1 hrs.
6.	Government schemes, subsidies and institutional support for sericulture entrepreneurs.	1 hrs.
7.	Functions of: Central Silk Board, NABARD, Sericulture Department Banks and cooperative societies	1 hrs.
8.	Management principles in sericulture enterprises.	1 hrs.
9.	Cost of cultivation and cocoon production economics.	1 hrs.
10.	Financial management and record keeping.	1 hrs.
11.	Marketing of cocoons and silk products.	1 hrs.
12.	Cocoon markets and price fluctuations.	1 hrs.
13.	Value addition in silk products.	1 hrs.
14.	Packaging, branding and promotion of silk products.	1 hrs.

15.	Export potential of silk and silk products.	1 hrs.
Unit- 2 (Practical)1 Hours per week		Total 30 hours
16.	Identification of different sericulture-based enterprises in local areas.	
17.	Preparation of a simple profile of a successful sericulture entrepreneur.	
18.	Study of qualities and characteristics of entrepreneurs through case studies.	
19.	Preparation of a simple business idea in mulberry cultivation or silkworm rearing.	
20.	Visit to mulberry nursery and observation of nursery management practices.	
21.	Demonstration of silkworm rearing appliances and enterprise requirements.	
22.	Collection of information on government schemes and subsidies for sericulture farmers.	
23.	Preparation of simple records for sericulture enterprise management.	
24.	Calculation of cost of cultivation and cocoon production economics.	
25.	Market survey of cocoon market and silk product shops.	

Method of assessment for practical

Formative assessment		
Components for IA	Marks Assigned	Total
Practical test	10	10
Summative assessment		
Semester end examination	40	40

***Note:** 1. No separate practical exam.

2. Practical syllabus must be covered in theory question paper.

SERICULTURE - VI SEMESTER
SEC PAPER II: Entrepreneurship Development in Sericulture
Model Question Paper for Theory Examination

Time: 1½ Hours

Max Marks: 40

Instructions: Draw neat labelled diagrams wherever necessary

Section-A

I. Answer any FIVE of the following

5x2=10

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Section-B

II. Answer any FOUR of the following

4X5=20

- 7.
- 8.
- 9.
- 10.
- 11.

Section-C

III. Answer any ONE of the following

1X10=10

- 12.
- 13.

REFERENCES

1. Amithabha Sarkar (2009). *Mulberry Breeding*. Kalyani Publishers, New Delhi.
2. Anonymous (2000). *Silk Dyeing and Finishing Handbook*. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi and Calcutta.
3. Basavaraja, H.K., Aswath, S.K., Suresh Kumar, N., Mal Reddy, N. and Kalpana, G.V. (2005). *Silkworm Breeding and Genetics*. Central Silk Board, Bangalore.
4. Bhattacharya, M. and Mahadevappa, D. (2002). *Silk Weaving*, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
5. Chakraborti, S.P., Choudhuri, S. Roy, and Bindroo, B. B. (2013). *A Textbook on Mulberry Breeding and Genetics*. Kalyani Publishers, p. 193.
6. Dandin, S.B. and Giridhar, K. (2010). *Handbook of Sericulture Technologies*. Central Silk Board, Bengaluru.
7. Eikichi Hiratsuka (2000). *Silkworm Breeding*. Oxford & IBH Publications, New Delhi.
8. Ganga, G. (2003). *Comprehensive Sericulture Vol. II - Silkworm Rearing and Silk Reeling*, Oxford and IBH, New Delhi.
9. Ganga, G. and Sulochanachetty, J. (2019). *Introduction to Sericulture*. Oxford and IBH Publishing, New Delhi.
10. Jayant Jayaswal, Giridhar, K. Somi Reddy, J. Jagadish Prabhu, H. (2008). *Silkworm Seed Production*. Central Silk Board. Bengaluru, p. 131
11. Kumaresan, P. and Srinivasa, G. (2005). *Sericulture Extension Management and Economics*. Central Silk Board, Bangalore.
12. Mahadevappa, D. Haliyal, V.G., Shankar, D.G. and Ravindra Bhandiwad (2000). *Mulberry silk reeling technology*. Oxford & IBH Publishing Company, pp. 1-227.
13. Narasimhanna, M.N. (1998). *Manual on Silkworm Egg Production*. Central Silk Board, Bengaluru, p. 189.
14. Ramakrishna Naika, Venkataravana, P. and Sunil Kumar, T. (2024). *Sericulture Cultivation, Processing and Marketing*. Daya Publishing House, Delhi.
15. Sarkar, D.D. (1998). *The Silkworm Biology, Genetics and Breeding*. Vikas Publishing House Pvt. Ltd., New Delhi, p. 338
16. Sreerama Reddy, G. (Ed.) (1998). *Silkworm Breeding*. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi and Calcutta.
17. Tammanna, N. Sonuwalker (1993). *Handbook of silk technology*. Wiley Eastern.
18. Tribhuwan Singh, Madan Mohan Bhat, Mohammad Ashraf Khan (2010). *Silkworm Egg Science*. Daya Publishing House. Delhi, p. 290.