



|| Jai sri gurudev ||
SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA - 573116

DEPARTMENT OF BOTANY

Date :- 24/11/2023


To,
The Principal
SAFG College,
Channarayapatna

Requested Sir ,

Sub :- Requesting to get permission for field visit to Becca,

As per above mentioned subject from the department of Botany we have arranged field visit to RAGHAVENDRA DANVANTARI VANA and natural farming on Friday 24/11/2023 for 5TH semester B.Sc. botany students . So i hereby requesting you to grant permission for farm visit near Becca village .

Sowmya C.J
Head of the Department of Botany
S.A.F.G. College of Arts
Commerce & Science
Channarayapatna-573116


Principal
Sri Adichunchanagiri First Grade College
Channarayapatna-573116



|| JAI SRI GURUDEV ||
SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA-573116
Department of Botony

BOTANICAL FIELD VISIT REPORT 2023-2024

Place of visit:- Dhanavanthrivana and Natural farming, Becca

Date of visit:- 24th November 2023

As a part of curriculum, mentioned in the Botany 5th semester practical syllabus, field visit to Dhanavanthrivana and Natural farming, Becca which is home to many rare varieties of trees, plants, medicinal plants and flowers, was arranged by the department of botany, Sri Adichunchanagiri first grade college. Where we came to learn about the various plant species.

On 24th November 2023, we started moving from our department at 10:30am along with 12 students headed by Sowmya C V. We conducted field visit to the above mentioned place. In the farm students see the medicinal plants, wild plants and natural farming. It is nearer to village Becca run by farmer Raghavendra sir.

Some of plants observed.

- I. *Sarpagandhi*
- II. *Anjur*
- III. *Amruthmoni*
- IV. *Azadirachta indica(neem)*
- V. *Michelia champaka*
- VI. *Shami*
- VII. *Hippali*
- VIII. *Kadambavruksha*
- IX. *Sitaashoca*



During the course, we collected few plants specimens from the Farm.

Many wild plants are also observed in that region. He has grown many such plants along with coconut, banana and many fruit yielding plants and ornamental plant without removing the weed and without applying fertilizers or compost. Such a method of farming is called Pukuvuko technique.

Sowmya C.V
Head of the Department of Botany
S.A.F.G. College of Arts
Commerce & Science
Channarayapatna-573116

M. Jeyarathnam
Principal
Sri Adichunchanagiri First Grade College
Channarayapatna-573116

Then we visited new coconut oil factory constructed by Raghavendra Sir. There we all observed some of local trees like Mango, jack fruit, guava and some ornamental plants.

He gave a special plant tea for all the students & we took some rest in farm. Discussed about some taxonomy family related plants like

1. Clitoria junctia
2. Annona squamosa
3. Euphorbia Sp
4. Cocos nucifera



Salomya C.V
 Head of the Department of Botany,
 S.A.F.G. College of Arts,
 Commerce & Science,
 Channarayapatna-573116

M. Jeevalatha M.K
 Principal
 Sri Adichunchanagiri First Grade College
 Channarayapatna-573116

Plant Morphology and Taxonomy (Theory)

UNIT- 1

Morphology of Root, Stem and Leaf. Their modifications for various functions.

Inflorescence – types.

Structure and variations of flower.

Fruits–types. Floral diagram and floral formula.

Systems of classification: Artificial, Natural and Phylogenetic;

brief account of Linnaeus', Bentham & Hooker's, Engler and Prantl's system with Merits and demerits (a general outline on APG System).

Botanical gardens: Important botanical gardens of India and their importance (any five) .

Technique of Herbarium Preparation.

UNIT-2

Taxonomic Hierarchy: Concept of taxa (family, genus, species);

Categories and taxonomic hierarchy; Species concepts (biological, morphological, evolutionary).

Botanical Nomenclature: Principles and Rules (ICBN/ ICN); Latest code.

Brief account of Ranks of taxa, Typification, Author citation, valid publication, rejection of names, principle of priority and its limitations.

UNIT – 3

Biometrics, Numerical Taxonomy;

Phenetics and Cladistics: Characters; Variations; OTUs, character weighting and coding; Cluster analysis; Phenograms, cladograms (definitions and differences).

UNIT -4

Plant descriptions: Common terminologies used for description of vegetative and reproductive parts of the plants.

Study of the diagnostic features of Angiosperm families:

Dicot families: Annonaceae, Brassicaceae, Malvaceae, Rutaceae, Papilionaceae, Caesalpiniaceae, Mimosaceae, Myrtaceae, Apiaceae, Asteraceae, Apocynaceae, Solanaceae, Lamiaceae, Euphorbiaceae,

Monocot families: Liliaceae, Arecaceae, Orchidaceae and Poaceae.

Formative Assessment for Theory

Assessment Occasion/ Type	Marks
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	40 Marks

Formative Assessment as per NEP guidelines are compulsory

GENERAL PATTERN OF THEORY QUESTION PAPER (60 Marks for semester end Examination with 2 hrs. and 30 min. duration)

Part-A

1. Question Number 1-06 carries 2 Marks each. Answer any 05 questions. 10 Marks

Part-B

2. Question Number 07-11 carries 5 Marks each. Answer any 04 questions. 20 Marks

Part-C

3. Question Number 12-15 carries 10 Marks each. Answer any 03 questions. 30 Marks

(Minimum 1 Question from each unit and 10 marks question may have sub-question for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

	02 marks	05 marks	10 marks	Total marks
UNIT - 1	02 Question	01 Questions	01 Question	19
UNIT - 2	01 Question	01 Question	01 Question	17
UNIT - 3	01 Question	01 Question	01 Question (5 + 5 marks)	17
UNIT - 4	02 Questions	02 Question	01	19

V Semester III B.Sc Examination, DEC / JAN 2023-24

(Semester Scheme) (NEP)

PAPER – 1 Plant Morphology and Taxonomy

Time : 2.30 Hrs

Max. Marks: 60

PART – A

Define/ Explain any FIVE of the following :

(5 x 2= 10)

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

PART - B

Answer any FOUR of the following

(4 x 5= 20)

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

PART – C

Answer any four of the following

(3 x 10 = 30)

- 12.
- 13.
- 14.
- 15.

Plant Morphology and Taxonomy (Practicals)

1. Study of root, stem and leaf structure and modifications.
2. Study of inflorescence types. Study of flower and its parts, Study of fruits. Floral diagram and floral formula.
- 3-10. Study of **Dicot families**: Annonaceae, Brassicaceae, Malvaceae, Rutaceae, Papilionaceae, Caesalpiniaceae, Mimosaceae, Myrtaceae, Apiaceae, Asteraceae, Apocynaceae, Solanaceae, Lamiaceae, Euphorbiaceae, and **Monocot families**: Liliaceae, Arecaceae, Orchidaceae and Poaceae. Make suitable diagrams, describe them in technical terms (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification)
- 12-13. Identify plants/plant products of economic importance: Binomial name, Family and part used and uses. Cotton, Mango, Red gram, Green gram, Horse gram, Black gram, Bengal gram, Indigo, Brinjal, Tomato, Chilly, Tamarind, Bitter gourd, *Luffa*, Asafoetida, Cumin, Coriander, Coffee, Rubber, Tapioca, Ricinus, Ginger, Turmeric, Coir, Arecanut, Rice, Wheat, Ragi, Sugarcane, *Annona muricata*, *Catharanthus roseus*, *Rauwolfia serpentina*, *Justicia adhatoda*, *Vitex negundo* and *Leucas aspera*.
4. **Field visit*****: Local or outside area/ Botanical garden 3 to 5 days.
Submission: Record book, Tour report and Herbarium (Preparation of 05 properly identified herbarium specimens; mounting of a properly dried and pressed specimen of any common plants from your locality with herbarium label)

Formative Assessment for Practical

Assessment Occasion/ Type	Marks
Attendance	05
Test	05
Field visit (3 to 5 days)	05
Submission (Record book, Tour report and Herbarium)	10
Total	25 Marks

Formative Assessment as per NEP guidelines are compulsory

--

SCHEME OF PRACTICAL EXAMINATION (Distribution of marks): 25 marks for the Semester end examination

- | | |
|--|---------|
| 1. Identify, classify and describe the specimen A, B & C taxonomically | 9 Marks |
| 2. Describe the plant D using technical terms | 4 Marks |
| 3. Write the floral diagram and floral formula of the given specimen E | 4 Marks |
| 4. Identify the specimen F and G | 4 Marks |
| 5. Viva Voce - (Related to practicals) | 4 Marks |

Total: 25 Marks

General Instructions:

- Q1. Give specimen one each from Polypetalae, Gamopetalae and Monochlamydae/ Monocotyledons. Q2. Give specimen from family they studied.
- Q3. Give specimen from studied plants.
- Q4. Materials one each from morphology and economic botany.

Note: Same Scheme may be used for IA (Formative Assessment) examination

**UNIVERSITY OF MYSORE
III BSc PRACTICAL EXAMINATIONS
V SEMESTER,
BOTANY
PLANT MORPHOLOGY AND TAXONOMY**

Time: 3 Hrs

Max Marks: 25

- | | |
|---|---------|
| 1. Identify, classify and describe the specimen A, B & C taxonomically
(A- Polypetalae, B- Gamopetalae and C- Monochlamydae/ Monocotyledons) | 9 Marks |
| 2. Describe the plant D using technical terms
(specimen from studied family). | 4 Marks |
| 3. Write the floral diagram and floral formula of the given specimen E
(specimen from studied plants) | 4 Marks |
| 4. Identify the specimen F and G
(F – Plant morphology and G – Economic botany) | 4 Marks |
| 5. Viva Voce | 4 Marks |

Genetics and Plant Breeding (Theory)

UNIT- 1

Genetics: Mendelism- History; Principles of inheritance; Mendelian genetics and its extension; Chromosome theory of inheritance; Autosomes and sex chromosomes. Incomplete dominance and codominance. Multiple alleles, Lethal alleles, Epistasis,

UNIT- 2

Linkage, crossing over and chromosome mapping; Linkage and crossing over-Cytological basis of crossing over; Recombination frequency, two factor and three factor crosses; Interference and coincidence; Gene mapping; Sex Linkage. Variation in chromosome number and structure.

UNIT- 3

Cell Biology: Microscopy- Light microscopy, Phase contrast microscopy, Electron microscopy (SEM and TEM) and Fluorescence Microscopy. Ultrastructure and functions of cell wall, cell membrane and cell organelles (nucleus, mitochondria, chloroplast, Golgi apparatus, vacuole, endoplasmic reticulum, ribosome, spherosome and lysosome). mitosis and meiosis.

Structure and function of Chromosome

DNA and RNAs (chemical composition, structure, types and functions)

UNIT- 4

Plant Breeding: Introduction and objectives. Breeding systems: modes of reproduction in crop plants. Important achievements and undesirable consequences of plant breeding. Centers of origin and domestication of crop plants, plant genetic resources; Acclimatization, Selection methods- for self-pollination, cross pollination and vegetatively propagated plants. Hybridization: For self, cross and vegetative propagation in plants – Procedure, advantages and limitations.

Formative Assessment for Theory

Assessment Occasion/ Type	Marks
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	40 Marks

Formative Assessment as per NEP guidelines are compulsory

--

GENERAL PATTERN OF THEORY QUESTION PAPER (60 Marks for semester end Examination with 2 hrs. and 30 min. duration)

Part-A

1. Question Number 1-06 carries 2 Marks each. Answer any 05 questions. 10 Marks

Part-B

2. Question Number 07-11 carries 5 Marks each. Answer any 04 questions. 20 Marks

Part-C

3. Question Number 12-15 carries 10 Marks each. Answer any 03 questions. 30 Marks

(Minimum 1 Question from each unit and 10 marks question may have sub-question for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

	02 marks	05 marks	10 marks	Total marks
UNIT - 1	02 Question	01 Questions	01 Question	19
UNIT - 2	01 Question	01 Question	01 Question	17
UNIT - 3	02 Question	01 Question	01 Question	19
UNIT - 4	01 Questions	02 Question	01	17

V Semester III B.Sc Examination, DEC / JAN 2023-24

(Semester Scheme) (NEP)

PAPER – 2 Genetics and Plant breeding

Time : 2.30 Hrs

Max. Marks: 60

PART – A

Define/ Explain any FIVE of the following :

(5 x 2= 10)

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

PART - B

Answer any FOUR of the following

(4 x 5= 20)

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

PART – C

Answer any four of the following

(3 x 10 = 30)

- 12.
- 13.
- 14.
- 15.

Genetics and Plant Breeding (Practicals)

1. Hybridization: Emasculation, bagging, pollination and production of hybrids.
2. Pollen viability test- Hanging drop and tetrazolium test
3. Seed viability- TTC and Paper towel method
4. Vavilov's centres
6. Charts related to plant breeding.
- 7-8. Genetic problems: 2 each from monohybrid, dihybrid, incomplete dominance and interaction of genes.
9. Study of aneuploidy: Down's, Klinefelter's and Turner's syndrome.
10. Photographs/ permanent slides showing translocation ring, laggards and inversion bridge.
11. Study of Mitosis in onion root tips
12. Study of Meiosis in onion/ Chlorophytum flower buds.
13. Study of Micrometry
14. Karyotype (onion)

Genetic problems:

PROBLEMS ON MONOHYBRID CROSS

- 1) In Tomatoes Red fruit color (R) is dominant over yellow (r). A pure red fruited plant is crossed to a yellow fruited one. What will be the appearance of F₁? The F₁ are interbred and produce 320 off springs in the F₂. How many of them will be red and how many yellow? What will be the genotypes of F₂ and in what numbers ?
- 2) In pea plant, Tallness (T) is dominant over dwarfness (t). A tall pea crossed with dwarf produces offerings of which 50% are tall and 50% are dwarf. What are the genotypes of the parents ?

PROBLEMS ON DI- HYBRID CROSS

- 1) In garden pea, yellow seed color (Y) is dominant over green (y) and round seed shape (R) is dominant over wrinkled (r). The character pair segregate separately. A pure yellow wrinkled variety is crossed to a pure green round. Give the phenotypes and genotypes of F₁ and phenotypic ratio of F₂ generation. 20
- 2) A tall red when crossed with dwarf red produces a dwarf white. Give the genotypes of the parents.

PROBLEMS ON 2 POINT TEST CROSSES

1. In tomato, red fruit (R) is dominant over yellow fruit (r) and yellow flowers (W) are dominant over white flowers (w). A cross is made between true breeding plants with red fruit and yellow flowers and plants with yellow fruit and white flowers. The F1 generation plants are then test crossed to plants with yellow fruits and white flowers. The following results are obtained.

333 red fruits/ yellow flowers 64 red fruits/ white flowers

58 yellow fruits/ yellow flowers 350 yellow fruits/ white flowers

Calculate the map distance between the two genes.

2. Two different traits affecting pod characteristics in garden pea plants are enclosed by genes found on chromosome 5. Narrow pod is recessive to normal pod, yellow pod recessive to green pod. A true breeding plant with narrow, green pods was crossed to a true breeding plant with normal yellow pods. The F1 were then test crossed to plants with narrow, yellow pods. The following results were obtained.

144 normal green pods 150 narrow yellow pods

11 normal yellow pods 9 narrow green pods

How far apart are these two genes?

Formative Assessment for Practical

Assessment Occasion/ Type

Marks

Attendance

05

Test

05

Field visit

05

Submission

10

Total

25 Marks

Formative Assessment as per NEP guidelines are compulsory

SCHEME OF PRACTICAL EXAMINATION (Distribution of marks): 25 marks for the

Semester end examination

- | | |
|--------------------------------------|---------|
| 1. Solve the genetic problem A and B | 8 Marks |
| 2. Perform the experiment C and D | 6 Marks |
| 3. Comment on D | 3 Marks |
| 4. Make micro preparation of E | 4 Marks |
| 5. Viva - Voce | 4 Marks |

Total: 25 Marks

General Instructions:

- Q1. One each from monohybrid/ dihybrid and inter action of genes/linkage
- Q2. Pollen/ seed viability and micrometry/karyotype
- Q3. Chart from emasculation and bagging/ Vavilov's centres
- Q4. Mitosis/Meiosis
- Q5. Viva - Voce - related to practicals

UNIVERSITY OF MYSORE
III BSc PRACTICAL EXAMINATIONS
V SEMESTER,
BOTANY
GENETICS AND PLANT BREEDING

Time: 3 Hrs

Max Marks: 25

1. Solve the genetic problem A and B 8 Marks
(One each from monohybrid/ dihybrid cross /linkage)
2. Perform the experiment C and D 6 Marks
(C- Pollen / seed viability and D- micrometry / karyotype)
3. Comment on D 3 Marks
(Chart from emasculation and bagging/ Vavilov's centres)
4. Make micro preparation of E 4 Marks
((Mitosis/Meiosis)
5. Viva - Voce 4 Marks