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I BSc HORTICULTURE – SEMESTER - I

PAPER – I – THEORY SYLLABUS

BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE

(2020-23 Batch, with effect from 2020-21 onwards) CBCS Pattern 1116

Unit I: Introduction to Horticulture

1. Definition of horticulture, importance of horticulture in terms of economy, production.
2. Employment generation, environmental protection and human resource development.
3. Scope for horticulture in India.
4. Divisions of horticulture with suitable examples and their importance.
   Fruit and vegetable zones of India and Andhra Pradesh.

Unit II: Classification and Nutritional Values of Horticultures Crops

1. Classification of horticultural crops based on soil and climatic requirements.
2. Nutritive value of horticulture crops.
3. Export and import of horticulture plants.

Unit III: Environmental Factors – Horticulture Crops

1. Influence of soil – physical and chemical properties.
2. Climatic factors – light, photoperiod, temperature, relative humidity, rainfall.
3. Micro climate, pollution.
4. Influence of biotic and abiotic stresses on crop production.

Unit IV: Soil as a Medium for Plant Growth

1. Minerals and weathering to form soils; factors of soil formation.
2. Soil Taxonomy; Soil color, texture and structure; other physical properties and stability.
3. Soil Colloids and Charges; Ion adsorption and exchange.
4. Soil pH and Acidity; Soil Alkalinity and Salinity.

Unit V: Mineral nutrition of plants

1. Soil organic matter.
2. Soil microorganisms; soil faunal ecology.
3. Integrated nutrient management and soil tests.

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PRACTICAL SYLLABUS

Semester – I: Basic Concepts of Horticulture and Soil Science

1. Study of tools and implements in horticulture.
2. Layout of different planning system.
3. Layout of nutrition garden.
4. Preparation of nursery beds for sowing of vegetable seeds.
5. Digging of pits for fruit plants.
6. Preparation of fertilizer mixtures and field applicable.
7. Identification and management of nutritional disorders in vegetables.
8. Collection and preparation of soil samples, estimation of moisture, EC, Ph, and bulk density.
9. Textual analysis of soil by Robison's pipette method, chemical analysis of soil – Fe2o3, P, K, Ca, Mg and S, total N, organic carbon and exchange capacity

Suggested readings:

- Kumar, N. 1990, introduction to Horticulture, Rajalakshmi publications, Nagarcoil, Tamilnadu.
- Jitendra sing, 2002, Basic Horticulture, Kalyani publications, Hyderabad.
- Yerima Bernard P. K. and E. van Ranst, 2005, Introduction to Soil Science, Trafford publishing.

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MODEL PAPER FOR I SEMESTER
I B.Sc., HORTICULTURE – PAPER –I
BASIC CONCEPTS OF HORTICULTURE AND SOIL SCIENCE

TIME : 3 Hrs   Max marks: 75

PART –I

Write Short note any FIVE of the following   5X5=25

1. Importance and scope of Horticulture
2. Fruit zones in india.
3. Nutritive value of horticultural fruit crops.
4. Abiotic stress on crop production.
5. Write a short note on types of soil and their texture.
6. crops grown in acidic and Alkaline soils.
7. crops which have export value.
8. Write a short note on soil micro organisms.

PART –II

Answer any FIVE questions choosing at least two questions from each section, Draw labeled diagrams wherever necessary.   5x10=50

SECTION –A

9. Define horticulture and explain its importance in terms of economy improvement, employment generation and environmental protection.
10. Give a brief account on divisions of horticulture with suitable examples and their importance
11. Give an account on climatic requirements of horticultural crops.
12. Explain the nutrient value of vegetables.
13. Write a brief note on chemical properties of soil.

SECTION –B

14. Explain the effect of light, and temperature on horticultural crops.
15. Explain the factors of soil formation.
16. Write a short note on soil taxonomy.
17. Explain the integrated nutrient management.
18. Write a brief note on soil organic matter and how is it useful for plant growth.

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Blue print Paper – I

ic Concepts of Horticulture and Soil Science.

S.No	Unit	Shorts	Essays
1	I	2	2
2	II	1	2
3	III	1	2
4	IV	2	2
5	V	2	2

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Model Question Paper for Practical Examination
I Semester /Horticulture Core Course - 1
Fundamentals of Horticulture and Soil Science

Max. Time: 3 Hrs. Max. Marks: 50

1. Identify the horticulture tool/equipment and write its uses. 6 M
2. Neatly draw the layout of kitchen garden. 6 M
3. An irrigation method followed for horticulture crops with a neat sketch. 6 M
4. A) A planting system followed in orchard with a neat diagram. 6 M

   B) A famer wants to raise a mango orchard in one hectare of land with a spacing of 8 × 8 m and now calculate the number of plants he can be adopted if he chose the quincunx system of planting. 4 M

   C) A famer wants to raise oil palm in one hectare of land with a spacing of 7.5 × 7.5 m and now calculate the number of plants he can be adopted if he chose the hexagonal system of planting. 4 M
5. Define training and write different methods of training with a neat diagram. 4 M
6. Record + viva voice 10 + 4 =14 M

Suggested co-curricular activities for Horticulture Core Course – 1 in Semester- I:

A. Measurable:

a. Student seminars:

1. Importance, scope and statistics of horticulture in India and Andhra Pradesh
2. Branches or divisions of horticulture with suitable examples
3. Climatic zones of horticulture in India and Andhra Pradesh
4. Classification of horticultural crops based on soil and climate
5. Vegetable gardens
6. Ornamental gardens
7. Systems of planting in an orchard
8. Types and methods of pruning in horticultural crops
9. Training methods in horticultural crops
10. Soil taxonomy
11. Weathering process
12. Integrated nutrient management

D. Student Study Projects:

1. Demonstrate Kitchen garden
2. Demonstrate different methods of planting systems
3. Preparation of Soil colour charts
4. Collection of different soil samples of local area
5. Testing of Soil samples for nutrient analysis
6. Testing of soil samples for acidity, alkalinity and salinity
7. Collection of mineral deficiency symptoms of various horticultural crops of local area.
8. Collection of local weeds in horticultural fields
9. Method of demonstration on mixing of fertilizers
10. Method of demonstration on preparation of growth regulators
11. Collection of Herbarium on nutritional disorder of horticultural crops
12. Study of different tools and implements in horticulture

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modulesin syllabus of the course.
2. Visit to Horticulture Universitv/Research station.

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I BSc HORTICULTURE – SEMESTER - II

PAPER – II – THEORY SYLLABUS

PLANT PROPAGATION METHODS AND NURSERY MANAGEMENT

(2020-23 Batch, with effect from 2020-21 onwards) CBCS Pattern

Unit–I: Basics of propagation; structures and media for propagation

1. Introduction, principles and classification of plant propagation methods.
2. Selection of site for commercial nursery.
3. Ecological and economic factors.

Unit – II: Sexual propagation/Seed propagation

1. Sexual propagation and its importance.
2. Seed germination, process of seed germination.
3. Factors affecting seed germination.
4. Pre – germination treatments and viability tests.

Unit – III: Propagation through vegetative organs

1. Asexual propagation and its importance.
2. Plant propagation structures, containers and media.
3. Orchid propagation by rhizome.

Unit – IV: Vegetative propagation techniques

1. Propagation by cuttings: Root, Leaf and Stem cuttings.
2. Plant propagation by layering – simple, serpentine, mound and air layering.
3. Plant propagation by grafting – approached and detached (whip, cleft, side veneer and bark)
4. Plant propagation by budding – T -, Patch and chip budding technique

Unit V: Nursery Management Practices

1. Definition of nursery; Nursery – site selection, layout, records
2. Different types of nursery beds – flat beds, raised beds and sunken beds, their merits and demerits.
3. Nursery structures – Potting, Repotting; different nursery techniques and their management.
4. Problems in nursery management and its control; Nursery accreditation and certification.

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PRACTICALS SYLLABUS

Semester II: Plant Propagation methods and nursery management

1. Media for propagation of plants in nursery beds, pots and mist chamber
2. Preparation of nursery bds and sowing of seeds, Raising of rootstock
3. Seed treatments for breaking dormancy.
4. Preparation of plant material for potting, hardening plants in the nursery.
5. Practicing different types of cuttings, layering, graftings and buddings
6. Preparation of plant growth regulators for seed germination and vegetative propagation.

Suggested readings:

- Sadhu, M.K, 1996, plant propagation, New age International publishers, New Delhi.
- Sarma, R.R. 2002. Propagation of Horticultural Crops: Principles and Practices, Kalyani Publishers, New Delhi.
- Hartman, HT and Kester, D.E. 1976, plant propagation, principles and practices, prentice Hall of India Pvt ltd. Bombay.

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MODEL PAPER FOR II SEMESTER
I B.Sc., HORTICULTURE – PAPER –II
PLANT PROPAGATION AND NURSERY MANAGEMENT -2116

TIME : 3 Hrs

Max marks: 75

PART –I

Write Short note any FIVE of the following 5X5=25

1. Propagation by division.
2. Importance, merits & demerits of sexual propagation.
3. List out the plants that are raised by seeds
4. Plant propagation structures.
5. Leaf cuttings types
6. Patch and T- Budding.
7. Potting and Re- potting.
8. Types of nurseries.

PART –II

Answer any FIVE questions choosing at least two questions from each section, Draw labeled diagrams wherever necessary. 5x10=50

SECTION –A

9. Explain different types propagation methods
10. Write a brief note on selection of site for the commercial nursery.
11. Define seed germination and explain the process of seed germination.
12. Write a brief note on the methods of pre- germination treatments.
13. Write an account on asexual propagation and its merits and demerits.

SECTION –B

14. Explain the propagation methods in orchids.
15. Write an account on stem cuttings with example
16. Explain different types of layering with example
17. Write a brief note on different types of nursery beds, their merits &demerits.
18. Give an account on nursery tools and management.

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Blue print Paper – II

Plant Propagation and Nursery Management

S.No	Unit	Shorts	Essays
1	I	1	2
2	II	2	2
3	III	1	2
4	IV	2	2
5	V	2	2

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Model Question Paper for Practical Examination

II Semester /Horticulture Core Course - 2

Plant Propagation and Nursery Management

Max. Time: 3 Hrs. Max. Marks: 50

1.	Demonstrate methods to break seed dormancy.	8 M
2.	Demonstrate a method of vegetative propagation.	8 M
3.	Demonstrate routine practices in a nursery	8 M
4.	Identify the tool/ equipment used in horticulture	3× 4 = 12M
5.	Record + viva voice	10 + 4 = 14 M

Text books :

- **Sadhu . M .K 1996.** Plant propagation, New Age International Publishers, New Delhi
- **Sarma. R. R 2002** Propagation of Horticultural crops : Principles and practices Kalyani Publishers, New Delhi
- **Hartman. HT and Kester . D.E 1976** Plant propagation. Principles and Practices, Prentice Hall of India Pvt. Limited, Mumbai

Suggested co-curricular activities for Horticulture Core Course – 2 in Semester- I

A. Measurable :

a. Student seminars :

1. Types ofpropagation methods (Asexual and sexual)
2. Cuttings – Types of cuttings
3. Layering – Types of Layering
4. Grafting – Types of grafting
5. Budding – Types of Budding
6. Raising and management of nurse
7. Plant propagation structures - care and maintenance
8. Apomixis – Role of Apomixis in propagation
9. Nursery certification
10. Pest and Disease Management in nursery

b. Student Study Projects:

1. Demonstrate on different methods of Cuttings
2. Demonstrate on different methods of Layering
3. Demonstrate on different methods of Grafting
4. Demonstrate on different methods of Budding
5. Collection of data on disease symptoms in a local nursery.
6. Preparation of different media used in Nursery
7. Preparation of different plant growing containers
8. Preparation of different models of Propagation structures.

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modulesin syllabus of the course.

2. Visit to HorticultureNursery.

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II B.Sc., (Horticulture): III Semester (20

Paper-3: Olericulture

Theory Syllabus

Unit – 1 : Solanaceous vegetables (12 Hrs.)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing,manuring, irrigation, intercultural operations, diseases and their control, harvesting and yieldof following crops:

1. Cultivation of Brinjal
2. Cultivation of omato
3. Cultivation of Capsicum

Unit – 2 : Leafy vegetables (12 Hrs.)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

1. Cultivation of Amaranth and Spinach
2. Cultivation of Coriander and Mentha

Unit – 3 : Root and Tuber crops (12 Hrs.)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

1. Cultivation of Colocasia and Dioscorea
2. Cultivation of Sweet Potato and Tapioca
3. Cultivation of Carrot and Beet root

Unit – 4 : Cole crops (12 Hrs.)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing,manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

1. Cultivation of Cabbage
2. Cultivation of Cauliflower

Unit – 5 : Leguminous vegetables (12 Hrs.)

Unit – 5 : Leguminous vegetables (12 Hrs.)

Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing,manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops:

1. Cultivation of Cluster bean and double bean
2. Cultivation of Cow pea and Dolichos

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1.Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)

2.Student seminars (on topics of the syllabus and related aspects (individual activity)

3.Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams)

4.Study projects (by very small groups of students on selected local real-timeproblems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

B. General

1.Group Discussion

2.Try to solve MCQ's available online.

3.Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1.The oral and written examinations (Scheduled and surprise tests),

2.Closed-book and open-book tests,3.Problem-solving exercises,

4.Practical assignments and laboratory reports,

5.Observation of practical skills,

6.Individual and group project reports.

7.Efficient delivery using seminar presentations,

8.Viva voce interviews.

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GUIDELINES TO THE PAPER SETTER BLUE PRINT:

S.no	UNIT	SHORTS	ESSAYS
1	I	1	2
2	II	2	2
3	III	2	2
4	IV	1	2
5	V	1	2

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II B.Sc., (Horticulture): III Semester
Paper-3-P: Olericulture

Practical Syllabus

1. Identification of vegetable seeds and vegetable crops at different growthstages
2. Sowing/ transplanting of vegetables in main field
3. Determining the germination percentage of vegetable seed
4. Preparing vegetable nursery beds
5. Raising vegetable seedlings in nursery bed and portrays
6. Land preparation for sowing/ transplanting of vegetable crops
7. Fertilizer application for vegetable growing
8. Identification of major diseases and insect pests of vegetables
9. Visit to vegetable field to study methods of vegetable cultivation

Suggested readings :

* Bose T K et al. (2003) Vegetable crops, Naya Udhyog Publishers, Kolkata.

* Singh D K (2007) Modern vegetable varieties and production, IBN Publisher,Technologies, International Book Distributing Co, Lucknow.

* Premnath, Sundari Velayudhan and D P Sing (1987) Vegetables for the tropical region, ICAR, New Delhi

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II B.Sc. Horticulture – Paper III

OLERICULTURE

Model Question Paper (for 2020-23 batch w. e. f 2021-2022)

Time: 3Hrs Max Marks: 75

PART-I

Answer any FIVE Questions, each question carries FIVE marks. 5x5M =25M

1. Brinjal
2. Leafy vegetables – Diseases
3. Mentha
4. Tuber Crops
5. Root Crops – Harvesting
6. Cole Crops
7. Cow pea
8. Manuring

PART-II

Answer any FIVE questions. Choosing atleast TWO questions from each section.
Each question carries 10 marks. 5x10M = 50M

SECTION – A

9. Write a brief note on cultivation of Capsicum.
10. Explain the intercultural operations of Solanaceous vegetables.
11. Write a brief note on cultivation of Spinach.
12. Write a short note on diseases of their control in leafy vegetables.
13. Write a short note on cultivation of Colacasia.

SECTION – B

14. Explain the intercultural operations in Tuber Crops.
15. Write a short note on cultivation of Cauliflower.
16. Describe the soil and climate requirements of Cole crops.
17. Write a brief note on cultivation of Cluster bean.
18. Explain the process of irrigation and seed sowing in Leguminous plants.

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Model Question Paper for Practical Examination

III Semester /Horticulture Core Course - 3

Basics of Vegetable Science (Olericulture)

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration of seed germination/ viability test (A). 10 M
2. Demonstration of preparing nursery bed/ cultivation practice for a vegetable crop (B). 10 M
3. Identification of material (C & D -Vegetable plants) and writing scientific name, family and uses. 2 x 4 = 8M
4. Identification of a disease on vegetable plant (E) 4M
5. Identification and comment on a cultivation practice (F) 4 M
6. Record + Viva Voice 10 + 4 = 14 M

Text books :

- **Bose T K et al. (2003)** Vegetable crops, NayaUdhyog Publishers, Kolkata.
- **Singh D K (2007)** Modern vegetable varieties and production, IBN Publisher Technologies, International Book Distributing Co, Lucknow.
- **Premnath, SundariVelayudhan and D P Sing (1987)** Vegetables for the tropical region, ICAR, New Delhi

Suggested co-curricular activities for Horticulture Core Course -3 in Semester- III :

A. Measurable :

a. Student seminars :

1. Production Technology of Solanaceous crops
2. Production Technology of Leafy Vegetables
3. Production Technology ofRoot and Tuber crops
4. Production Technology ofCole crops
5. Production Technology of Leguminous crops
6. Special intercultural operations in vegetable crops
7. Major Pests and Diseases of vegetable crops and their management
8. Morphological characters of vegetable crops
9. Maturity and Harvesting indices of vegetable crops
10. Nutritional aspects of vegetable crops

b. Student Study Projects:

1. Identification and Herbarium preparation of different vegetable seeds
2. Identification and Herbarium preparation of disease symptoms of vegetable crops
3. Identification and Herbarium preparation of pest symptoms of vegetable crops
4. Raising of vegetables in Nursery and portrays

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modulesin syllabus of the course.

2. Visit to Horticulture University/ Research Station.

3. Visit to a vegetablenursery and vegetable crop field.

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II BSc HORTICULTURE – SEMESTER – IV

PAPER – IV – THEORY SYLLABUS

BASICS OF FRUIT SCIENCE (POMOLOGY)

Unit I : Introduction to Fruit crops

1. Importance of fruit growing in India and Andhra Pradesh.
2. Nutritive value of fruits.
3. Area and production of India and Andhra Pradesh.
4. Export and import potential of fruits in India. Constraints in fruit production and remedies to overcome them.

Unit II : Tropical Fruit Crops

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, intercropping, harvesting and yield, diseases and pests of the following tropical fruit crops:
(a) Mango (b) Guava and (c) Papaya

Unit III : Sub-tropical and Temperate Fruit Crops

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, intercropping, harvesting and yield, diseases and pests of the following sub-tropical and temperate fruit crops:
(a) Grapes (b) Pomegranate (c) Citrus and (d) Apple

Unit IV : Arid and Minor Fruit Crops

Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, inter cropping, harvesting and yield, diseases and pests of the following arid fruit crops:
(a) Amla (b) Dates and (c) Wood apple

Unit V : Management Practices for Fruit Crops

1. Sustainable Production Practices for Local Fruit Production.
2. Integrated Orchard Management/Principles of IPM.
3. Harvesting and Labor Concerns
4. Grading, packing, storage and marketing of fruits.

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PRACTICAL SYLLABUS
SEMESTER – IV
PAPER – IV

BASICS OF FRUIT SCIENCE (POMOLOGY)

1. Study of varieties of Mango, Papaya and Guava.
2. Study of varieties of Grape, Pomegranate, Citrus and Apple.
3. Study of varieties of Amla, Dates and Wood apple.
4. Manure and fertilizer application including biofertilizers in different fruit crops.
5. Methods of application, calculation of the required quantity of manure and fertilizers based on the nutrient content.
6. Use of growth regulators in fruit crops.
7. Identification and collection of important pests in fruit crops.
8. Identification and collection of important diseases in fruit crops and herbarium preparation.
9. Visit to a local fruit market/commercial orchard.

Text books :

- **Chattopadhyay, T.K. 1997.** Text book on Pomology (Fundamentals of fruit growing), Kalyani Publishers, Hyderabad.
- **Chundawat, B.S. 1990.** Arid Fruit Culture, Oxford and IBH, New Delhi.
- **Gourley J H 2009.** Text book of Pomology, Read Books Publ., Canada

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MODEL PAPER FOR SEMESTER IV

II BSc HORTICULTURE – PAPER – IV

BASICS OF FRUIT SCIENCE (POMOLOGY)

Time: 3 hours **Max Marks: 75M**

PART-I

Write Short note any FIVE of the following 5X5=25M

1. Export and Import of fruits in India.
2. Propagation of Mango.
3. Varieties of (a) Guava & (b) Papaya
4. Soil for (a) Grapes & (b) Pomegranate
5. Climatic requirements for (a) Pomegranate & (b) *Citrus*
6. Propagation of (a) Amla & (b) Wood apple
7. Principles of IPM.
8. Harvesting of fruits.

PART-II

Answer any FIVE questions choosing atleast two questions from each section.
5X10=50M

SECTION-A

9. Describe the nutritive value of fruits.
10. Give an account on importance of fruits and constraits in fruit production.
11. Discuss the cultivation practices of Mango.
12. (a) Soil and climate for Guava (b) Diseases and pests of Guava.
13. (a) Soil and climate for Apple (b) Diseases and pests of Apple.

SECTION-B

14. Discuss the cultivation practices of Grapes.
15. (a) Soil and climate for Dates (b) Diseases and pests of Dates.
16. Discuss the cultivation practices of Amla.
17. Write an essay on Grading, Packing, Storage and Marketing of fruits.
18. Discuss about Integrated Orchard Management.

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A. [illegible] 2/5/22

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Semester - IV
Blue Print for Paper – IV

BASICS OF FRUIT SCIENCE (POMOLOGY)

S.No	Unit	Shorts	Essays
1	I	1	2
2	II	2	2
3	III	2	2
4	IV	1	2
5	V	2	2

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Model Question Paper for Practical Examination
Semester - IV
Paper – IV
BASICS OF FRUIT SCIENCE (POMOLOGY)

Max. Time: 3 Hrs. Max. Marks: 50M

1. Describing cultivation practice for a fruit crop. **10 M**
2. Identification with remarks on Mango/ Guava/Papaya variety. **5 M**
3. Identification with remarks Grape/Pomegranate/Citrus/Apple variety. **5 M**
4. Identification with remarks Amla, Dates and Wood apple. **5 M**
5. Identify the disease and pest symptoms and write its causal organism. 2 x 5 = **10 M**

6. Record + Viva Voice 10 + 5 = **15 M**

Suggested co-curricular activities for Semester- IV; PAPER - IV :
A. Measurable :
a. Student seminars:
1. Nutritional value of fruits growing in India and Andhra Pradesh
2. Production technology of major tropical fruit crops
3. Production technology of major tubtropical and temperate fruit crops
4. Production technology of major arid and minor fruit crops
5. Special intercultural operations in fruit crops
6. Intercropping in fruit crops.
7. Methods of irrigation of fruit crops.
8. Methods of fertilizer application of fruit crops.
9. Major pests and diseases of fruit crops and their management.
10. Maturity and harvesting indices of fruit crops.
11. Principles of Integrated Orchard Management (IOM).

b. Student Study Projects:

1. A report on vegetable crops in a locality.
2. Collection and preparation of herbarium of fruit crops in their area.
3. A report on various inter-culture practices for a fruit crop.
4. Study report on nutritional disorders of fruit crops in a locality.
5. Study report on diseases of fruit crops in a locality.
6. A report on use of fertilizers, pesticides, herbicides and PGRs for local fruit crops.
7. A report on harvest to marketing for a fruit crop.
8. Report on economics of a fruit crop in their locality.
9. A study report on different methods of irrigation of fruit crops in a locality.

c. Assignments: Written assignment at home / during '0' hour at college; preparation of
charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus
of the course.

2. Visit to Horticulture University/ Research Station/ Commercial Orchard.

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II BSc HORTICULTURE – SEMESTER – IV

PAPER – V – THEORY SYLLABUS

PESTS AND DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT

Unit – I : Basics of Entomology and Plant Pathology

1. Classification of Insects up to orders and families of economic importance; Study of insect pests (Distribution, host range, biology, nature of damage and management) in horticultural crops.

2. Disease triangle and disease pyramid; Plant Pathology : Definition

3. A general account on symptoms of plant diseases caused by Viruses and Bacteria.

4. A general account on symptoms of plant diseases caused by Fungi.

Unit – II : Pests and Diseases of Vegetables Crops

1. Bhendi : Spotted boll worms, Red cotton bug, Yellow vein mosaic.
2. Cucurbits : Fruit flies, Pumpkin beetles; Downy and powdery mildews.
3. Potato : Potato tuber moth, Golden cyst nematode; Late blight.
4. Sweet Potato : Sweet potato weevil, Vine borer; Mottled necrosis.

Unit – III : Pests and Diseases of Fruit Crops

1. Coconut :.Rhinoceros beetle, Burrowing nematode; Ganoderma root rot, Grey blight
2. Banana : Banana weevil; Banana aphids; Panama wilt; Bunchy top
3. Cashew : Tea mosquito bug; Cashew stem borer; Anthracnose; Pink disease
4. Custard apple : Mealy bug; Fruit boring caterpillar; Anthracnose; Glomerella fruit rots.

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Unit – IV : Pests and Diseases of Commercial Flower Crops

1. Rose : Rose Aphid, Dieback, and Black spot
2. Marigold : Aphids, Leaf spot, and Bud rot
3. Gerbera : Thrips, White flies and Blossom blight
4. Gladiolus :Cut worms, Leaf Eating Caterpillar and Corm rot.

Unit – V : Management of Pests and Diseases

1. Principles and methods of plant disease management.
2. Integrated Plant disease management.
3. Fungicides classification based on chemical nature; commonly used insecticides, fungicides, bactericides and nematicides.
4. Preparation of fungicidal solutions, slurries, pastes and their application.

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PRACTICAL SYLLABUS
SEMESTER - IV
PAPER – V
PESTS AND DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT

1. Study of characteristics of insect pests, microbial pathogens, nematodes causing diseases on different plants given in the theory syllabus.

2. Identification of disease symptoms on different plants given in the theory syllabus.

3. Observing and acquiring knowledge on pesticides, fungicides etc.,

4. Acquaintance with methods of application of common fungicides.

5. Field visit and acquaintance with disease of crops

Text books :

- **Verma L R and R C Sharma 1999.** Diseases of Horticultural Crops – Fruits, Indus Publishing, New Delhi.
- Diseses of Horticulture Crops and their management, TNAU Publ. Agrimoon.Com
- **Jagatap G P, D N Dhutraj and Utpal Dey. 2001.** Diseases of Horticultural crops and their management, Agrobios Publications.

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MODEL PAPER FOR SEMESTER IV

II BSc HORTICULTURE – PAPER – V

PESTS AND DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT

Time: 3 hours **Max Marks: 75M**

PART-I

Write Short note any FIVE of the following 5X5=25M

1. (a) Disease triangle (b) Disease pyramid
2. Yellow vein mosaic of Bhendi
3. Late blight of Potato
4. *Ganoderma* root rot
5. Cashew stem borer
6. Rose aphid
7. Gerbera Blossom Blight
8. Nematicides

PART-II

Answer any FIVE questions choosing atleast two questions from each section. 5X10=50M

SECTION-A

9. Give a general account on symptoms of plant diseases caused by Viruses.
10. Give a general account on symptoms of plant diseases caused by Fungi.
11. Discuss the pests and disease of Cucurbits.
12. Discuss the pests and disease of Sweet potato.
13. Describe the pests and disease of Banana.

SECTION-B

14. Describe the pests and disease of Custard apple.
15. Write an essay on pests and disease of Marigold.
16. Write an essay on pests and disease of Gladiolus.
17. Discuss the principles and methods of plant disease management.
18. Describe the preparation of fungicidal solutions, slurries, pastes and their application

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Semester - IV
Blue Print for Paper – V

PESTS AND DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT

S.No	Unit	Shorts	Essays
1	I	1	2
2	II	2	2
3	III	2	2
4	IV	2	2
5	V	1	2

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Model Question Paper for Practical Examination
Semester - IV
Paper – V
PESTS AND DISEASES OF HORTICULTURE PLANTS AND THEIR MANAGEMENT

1. Identify and comment on insect diseases A & B	2 x 5 = **10 M**
2. Identify and comment on microbial diseases C & D	2 x 5 = **10 M**
3. Identify and comment on nematodal diseases E & F	2 x 5 = **10 M**
4. Identify and comment on Pesticide/ Fungicides G & H	2 × 4 = **6 M**
5. Record + Herbarium + Viva Voice	10 + 4= **14 M**

Suggested co-curricular activities for Semester- IV ; PAPER - V:

A. Measurable :

a. Student seminars :

1. Disease symptoms and their management of vegetable crops
2. Disease symptoms and their management of ornamental crops
3. Disease symptoms and their management of fruit crops
4. Disease symptoms of nematode and their management in horticultural crops
5. Role of Integrated Pest Management (IPM) in horticultural crops
6. Role of Integrated Disease Management (IDM) in horticultural crops
7. Classification of insecticides
8. Classification of fungicides

b. Student Study Projects:

1. Identification and herbarium preparation of disease symptoms of vegetable crops
2. Identification and herbarium preparation of disease symptoms of ornamental crops.
3. Identification and herbarium preparation of disease symptoms of fruit crops
4. Preparation of laminated photos of major diseases of horticultural crops

5. Preparation of laminated photos of major fungicides used in horticultural crops

6. Preparation of laminated photos of major insecticides used in horticultural crops

c. Assignments: Written assignment at home / during '0' hour at college; preparation of
charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus
of the course.
2. Visit to Horticulture University/ Research Station/Horticultural fields.
3. Visit to Pesticide industries/shops.

RECOMMENDED ASSESSMENT OF STUDENTS:

Recommended continuous assessment methods for all courses:
Some of the following suggested assessment methodologies could be adopted.
Formal assessment for awarding marks for Internal Assessment in theory.

(a) Formal:

1. The oral and written examinations (Scheduled and surprise tests),
2. Simple, medium and Critical Assignments and Problem-solving exercises,
3. Practical assignments and laboratory reports,
4. Assessment of practical skills,
5. Individual and group project reports,
6. Seminar presentations,
7. Viva voce interviews.

(b) Informal:

1. Computerized adaptive testing, literature surveys and evaluations,
2. Peers and self-assessment, outputs form individual and collaborative work
3. Closed-book and open-book tests,

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