

**P S G V P Mandal's**  
**S I Patil Arts, G B Patel Science and S T K V S Commerce College, Shahada, Dist –**  
**Nandurbar**

**Department of Botany**  
**Certificate course in Horticulture Technology**

**Paper I Fundamentals of Horticulture**

**(6 Credits, Total no. of Lectures 90)**

- I Basic concepts of horticulture: (08)**
- 1.1 Scope and importance
  - 1.2 National scenario, production, export and import of horticultural crops
  - 1.3 Nutritive value of horticultural crops
- II Horticultural Disciplines: Definition, Concepts and applications of (06)**
- 2.1 Pomology
  - 2.2 Olericulture
  - 2.3 Floriculture
  - 2.4 Sericulture
- III Methods of Plant Propagation - (10)**
- 3.1 Introduction and importance
  - 3.2 Types – (a) Sexual  
(b) Vegetative
  - 3.3 Sexual propagation by seeds
    - a) Advantages and disadvantages
    - b) Seed dormancy and its types
    - c) Measures to overcome seed dormancy
    - d) Seed viability
    - e) Seed germination
- IV Vegetative Propagation: (12)**
- 4.1 Advantages and disadvantages
  - 4.2 Definition and types
  - (i) Cutting (ii) Budding (iii) Layering (iv) Grafting
  - 4.3 Anatomical and physiological basis of rooting
- V Training and Pruning of plants: (06)**
- 5.1 Objectives of Training and Pruning
  - 5.2 Differences between Training and Pruning
  - 5.3 Advantages of Training and Pruning
- VI Protected cultivation of crops (16)**

- 6.1 Different protective structures for crop production like Greenhouse, Cloth house, Hot beds, Cold frame
- 6.2 Relevance of Greenhouse technology
- 6.3 Types of greenhouses- (a) Based on covering material  
(b) Based on environmental control  
(c) Based on shape
- 6.4 Designing of Greenhouse- Site selection, Orientation, Fabrication of Frame, Covering
- 6.5 Requirements for planting in greenhouse like irrigation, fertigation, CO<sub>2</sub> Enrichment, light control, Cooling and heating systems.
- 6.6 Greenhouse cultivation of Rose, Chrysanthemum

**VII Preservation of fruits and vegetables (16)**

- 7.1 Methods of preservation- Storing, Canning, Drying, Preservation with Sugar, Preservation by Salt, Freezing
- 7.2 Preparation and preservation of fruits by – Jams, Jelly, Squash, and Ketchup

**VIII Horticulture and National Economics- (16)**

- 8.1 Importance of horticulture in national economy
- 8.2 Horticultural marketing, marketing channels, market function
- 8.3 Role of STC, NAFED, APEDA, National Horticulture Board, Maharashtra Agricultural produce and marketing Board in financing and marketing of horticultural products.

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## **Paper- II -Nursery Techniques**

**(6 Credits, Total no. of Lectures 90)**

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| <b>I</b>   | <b>Introduction</b>  | <b>(04)</b> |
| 1.1        | Objectives   |             |
| 1.2        | Scope and importance   |             |
| <b>II</b>  | <b>Nursery Establishment and Maintenance</b>   | <b>(08)</b> |
| 2.1        | Prerequisites for Nursery establishment  |             |
| 2.2        | Operations in a commercial nursery   |             |
| 2.3        | Maintenance of a nursery   |             |
| 2.4        | Pots and other materials needed in the nursery   |             |
| 2.5        | Factors affecting nursery establishment  |             |
| <b>III</b> | <b>Soil and plant growth</b>   | <b>(06)</b> |
| 3.1        | An introduction- topsoil, subsoil, bedrock   |             |
| 3.2        | Soil types   |             |
| 3.3        | Soil physical properties- texture, porosity,   |             |
| 3.4        | Preparation of Beds  |             |
| <b>IV</b>  | <b>Soilless production of horticultural crops</b>  | <b>(12)</b> |
| 4.1        | Planting media- Sand, Vermiculture, Peat, Sphagnum moss, Leaf mould, Compost, Shredded bark and Sawdust, coco peats etc. |             |
| 4.2        | Mineral source   |             |
| 4.3        | Moisture source  |             |
| 4.4        | Hydroponics  |             |
| <b>V</b>   | <b>Garden Tools and accessories</b>  | <b>(16)</b> |
| 5.1        | Grafting knife, Sickle, Secateurs, Pruning shear, Long arm scissors  |             |

	Spade, digging fork, Shovel, Watering can, Sprayer and Duster etc	
5.2	Earthen pots, Plastic pots, Community pots, Fiber pots, Polythene bags, Basket containers etc	
5.3	Tying and wrapping materials, Grafting wax, Polythene tapes, Paraffin Papers, Supports, Baskets etc	
<b>VI</b>	<b>After care of plants</b>	<b>(08)</b>
	Weeding, Top dressing, Skating, Disbudding, Defoliation, Defruiting, Pruning, Shaping and Topiary	
<b>VII</b>	<b>Phytohormones</b>	<b>(06)</b>
7.1	Growth regulators	
7.2	Rooting hormones	
7.3	Growth promoters	
7.4	Growth retardants	
7.5	Sex modifiers	
7.6	Flower induction	
7.7	Applications	
<b>VII</b>	<b>Nursery Management</b>	<b>(14)</b>
8.1	Seed sowing	
8.2	Transplanting	
8.3	Nutrients	
8.4	Ploughing and watering	
8.5	Harvesting	
8.6	Insect, pest and disease management	
8.7	Marketing	
<b>VIII</b>	<b>Principles of culturing Plants Indoor</b>	<b>(16)</b>
9.1	Importance and scope of indoor gardening	
9.2	Light, Humidity, Temperature, Watering, Nutrition	

- 9.3 Containers, potting mixture of indoor plants
- 9.4 Hanging basket plants and care
- 9.5 Terrariums- selection of plants, planting details
- 9.6 Dish gardens
- 9.7 Terrace garden

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### **Paper III**

#### **Practical based on Paper I and Paper II**

**(8 Credits, 120 Hours)**

- Practical-1&2. Study of nursery tools and accessories
- Practical -3. Study of soil types, texture, water holding capacity and pH
- Practical -4. Study of different planting media
- Practical -5. Preparation of Nursery beds
- Practical -6. Preparation of seedling – (a) on Seed beds and (b) in Polythene bags
- Practical -7- 8. Study of vegetative propagation methods- Cutting, Budding, Layering & Grafting
- Practical -9. Seed germination- Blotter method
- Practical -10. Seed viability test
- Practical -11- 14. Preparation of Jam, Jelly, Squash and Ketchup
- Practical -14. Vermicompost preparation
- Practical -17. Effect of Phytohormones
- Practical -18. Potting, Repotting and Transplanting
- Practical -19 & 20. Preparation of hanging baskets, dish garden
- Practical -21. Terrarium preparation
- Practical -22. Preparation and uses of fungicides (Bordex mixture and Burgandy mixture) and Pesticides (Neem fruit extract)

**Note:** 1) Visit to Commercial Nursery/ Greenhouse

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## Reference Books:

1. Horticulture. V. L. Sheela. 2011. MJP Publishers, Chennai
2. Horticulture principles and practices. Acquaah, G. 2002. 2<sup>nd</sup> edition- Pearson Education Pvt. Ltd. (Singapore)
3. Floriculture and Landscaping- Bose, T. k., Maiti, R. G., Dhua, R. S. and Das, P. 1999. Naya Prakash, Calcutta
4. Home gardening- Trivedy, P. P. 1987, ECA Publication, New Delhi
5. Horticultural Science- Janik, J. 1992. W. H. Freeman and Company, San Francisco
6. Introduction to Horticulture- Kumar, N. 1994. Rajalakshmi Publication, Ludhiana, India
7. Soils and Soil fertility- Thomson and Troen, Tata, McGraw Hill Publication Co. Ltd. New Delhi
8. Handbook of Microbial Biofertilizers- Rai, M. K. 2006. The Hawarth Press Inc.
9. Text Book of Soil science- Biswas, T. D. and Mukherjee, S. K. McGraw Hill Publishing Co., New Delhi
10. Basic horticulture- Singh, J. Kalyani Publishers, New Delhi
11. Floriculture in India- Randhawa, G. S. and Mukhopadhyay, A. Allied Publishers (P) Ltd, New Delhi
12. Commercial crops- Lenka. D. Kalyani Publishers, New Delhi
13. Horticulture- Dr. Sabale, R. N. AnmolePrakashan, Pune
14. Textbook of Horticulture- Rao Manibhushan K. Mcmillan India Ltd., Mumbai
15. A textbook of horticulture and Gardening- Dr. Khan, M. R. NiraliPrakashan, Pune

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