

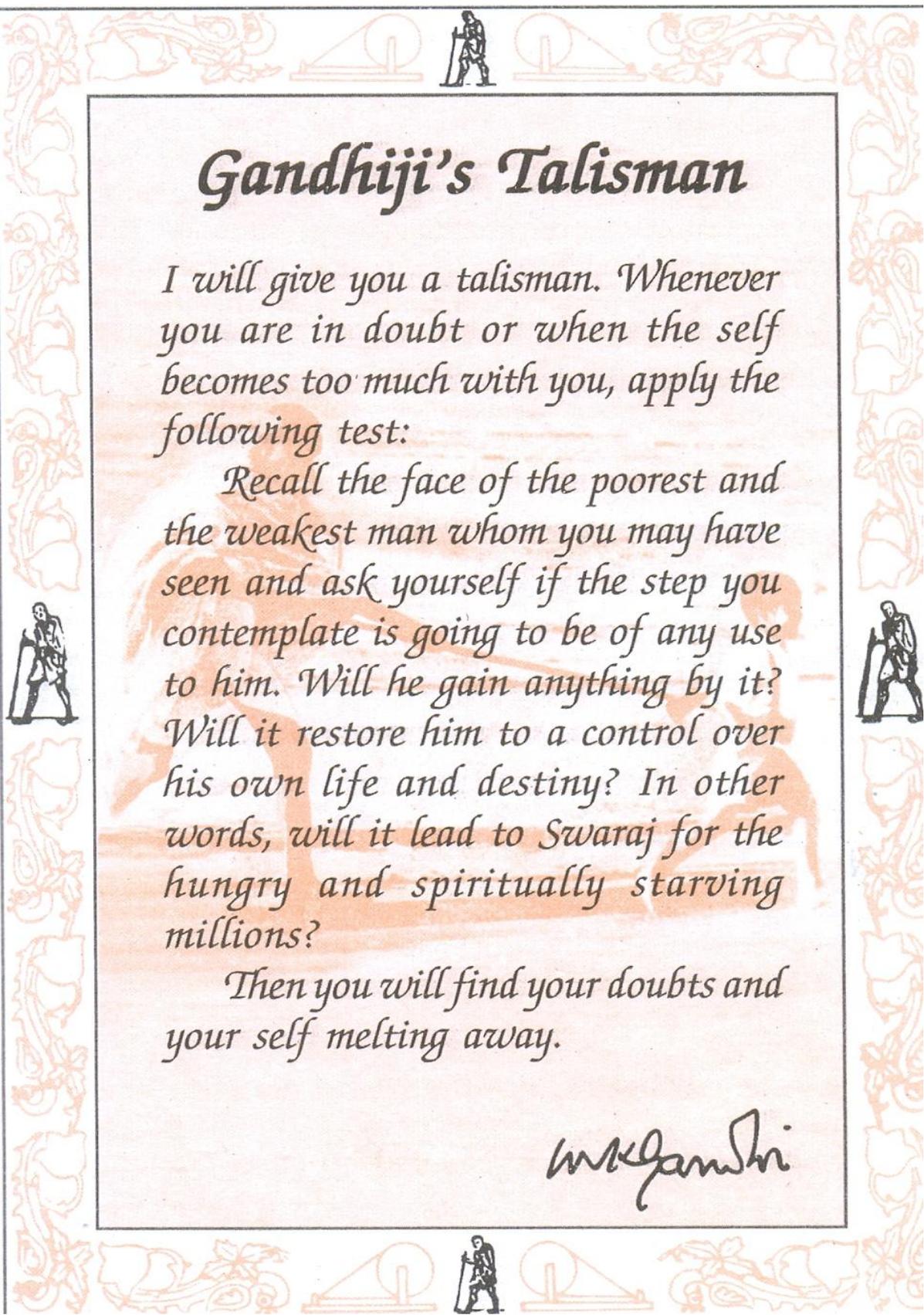
# **LEARNING OUTCOME BASED VOCATIONAL CURRICULUM**

**JOB ROLE: Gardener**  
(QUALIFICATION PACK: Ref. Id.AGR/Q0801)  
**SECTOR: Agriculture**

**Classes 11 and 12**



**PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION**  
(a constituent unit of NCERT, under MHRD, Government of India)  
**Shyamla Hills, Bhopal- 462 013, M.P., India**  
<http://www.psscive.ac.in>



## Gandhiji's Talisman

*I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test:*

*Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj for the hungry and spiritually starving millions?*

*Then you will find your doubts and your self melting away.*

*M. Gandhi*

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CURRICULUM:**

**Agriculture- Gardener**

June, 2017

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**Published by:**

Joint Director

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# FOREWORD

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**T**he Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE) a constituent of the National Council of Educational Research and Training (NCERT) is spearheading the efforts of developing learning outcome based curricula and courseware aimed at integrating both vocational and general qualifications to open pathways of career progression for students. It is a part of Centrally Sponsored Scheme of Vocationalisation of Secondary and Higher Secondary Education (CSSVSHSE) launched by the Ministry of Human Resource Development, Government of India in 2012. The PSS Central Institute of Vocational Education (PSSCIVE) is developing curricula under the project approved by the Project Approval Board (PAB) of *Rashtriya Madhyamik Shiksha Abhiyan (RMSA)*. The main purpose of the learning outcome based curricula is to bring about the improvement in teaching-learning process and working competences through learning outcomes embedded in the vocational subject.

It is a matter of great pleasure to introduce this learning outcome based curriculum as part of the vocational training packages for the job role of Gardner. The curriculum has been developed for the higher secondary students of vocational education and is aligned to the National Occupation Standards (NOSs) of a job role identified and approved under the National Skill Qualification Framework (NSQF).

The curriculum aims to provide children with employability and vocational skills to support occupational mobility and lifelong learning. It will help them to acquire specific occupational skills that meet employers' immediate needs. The teaching process is to be performed through the interactive sessions in classrooms, practical activities in laboratories and workshops, projects, field visits, and professional experiences.

The curriculum has been developed and reviewed by a group of experts and their contributions are greatly acknowledged. The utility of the curriculum will be adjudged by the qualitative improvement that it brings about in teaching-learning. The feedback and suggestions on the content by the teachers and other stakeholders will be of immense value to us in bringing about further improvement in this document.

Hrushikesh Senapaty  
*Director*  
*National Council of Education Research and Training*

# PREFACE

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India today stands poised at a very exciting juncture in its saga. The potential for achieving inclusive growth are immense and the possibilities are equally exciting. The world is looking at us to deliver sustainable growth and progress. To meet the growing expectations, India will largely depend upon its young workforce. The much-discussed demographic dividend will bring sustaining benefits only if this young workforce is skilled and its potential is channelized in the right direction.

In order to fulfil the growing aspirations of our youth and the demand of skilled human resource, the Ministry of Human Resource Development (MHRD), Government of India introduced the revised Centrally Sponsored Scheme of Vocationalisation of Secondary and Higher Secondary Education that aims to provide for the diversification of educational opportunities so as to enhance individual employability, reduce the mismatch between demand and supply of skilled manpower and provide an alternative for those pursuing higher education. For spearheading the scheme, the PSSCIVE Central Institute of Vocational Education (PSSCIVE) was entrusted the responsibility to develop learning outcome based curricula, student workbooks, teacher handbooks and e-learning materials for the job roles in various sectors, with growth potential for employment.

The PSSCIVE firmly believes that the vocationalisation of education in the nation need to be established on a strong footing of philosophical, cultural and sociological traditions and it should aptly address the needs and aspirations of the students besides meeting the skill demands of the industry. The curriculum, therefore, aims at developing the desired professional, managerial and communication skills to fulfil the needs of the society and the world of work. In order to honour its commitment to the nation, the PSSCIVE has initiated the work on developing learning outcome based curricula with the involvement of faculty members and leading experts in respective fields. It is being done through the concerted efforts of leading academicians, professionals, policy makers, partner institutions, Vocational Education and Training experts, industry representatives, and teachers. The expert group through a series of consultations, working group meetings and use of reference materials develops a National Curriculum. Currently, the Institute is working on developing curricula and courseware for over 100 job roles in various sectors.

We extend our gratitude to all the contributors for selflessly sharing their precious knowledge, acclaimed expertise, and valuable time and positively responding to our request for development of curriculum. We are grateful to MHRD and NCERT for the financial support and cooperation in realising the objective of providing learning outcome based modular curricula and courseware to the States and other stakeholders under the PAB (Project Approval Board) approved project of *Rashtriya Madhyamik Shiksha Abhiyan (RMSA)* of MHRD.

Finally, for transforming the proposed curriculum design into a vibrant reality of implementation, all the institutions involved in the delivery system shall have to come together with a firm commitment and they should secure optimal community support. The success of this curriculum depends upon its effective implementation and it is expected that the managers of vocational education and training system, including subject teachers will make efforts to create better facilities, develop linkages with the world of work and foster a conducive environment as per the content of the curriculum document.

The PSSCIVE, Bhopal remains committed in bringing about reforms in the vocational education and training system through the learner-centric curricula and courseware. We hope that this document will prove useful in turning out more competent Indian workforce for the 21<sup>st</sup> Century.

RAJESH P. KHAMBAYAT  
*Joint Director*  
*PSS Central Institute of Vocational Education*

## ACKNOWLEDGEMENTS

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On behalf of the team at the PSS Central Institute of Vocational Education (PSSCIVE) we are grateful to the members of the Project Approval Board (PAB) of *Rashtriya Madhyamik Shiksha Abhiyan* (RMSA) and the officials of the Ministry of Human Resource Development (MHRD), Government of India for the financial support to the project for development of curricula.

We are grateful to the Director, NCERT for his support and guidance. We also acknowledge the contributions of our colleagues at the Technical Support Group of RMSA, MHRD, RMSA Cell at the National Council of Educational Research and Training (NCERT), National Skill Development Agency (NSDA) and National Skill Development Corporation (NSDC) and Agriculture Skill Council of India (ASCI) for their academic support and cooperation.

We are grateful to the contributors for their earnest efforts and contributions in the development of this learning outcome based curriculum. Their names are acknowledged in the list of contributors. The contributions of the course coordinator Rajiv Kumar Pathak, Professor and Head, Department of Agriculture and Animal Husbandry and the reviewer D. L. N. Rao, Emeritus Scientist, Indian Institute of Soil Science, Nabi Bagh, Berasia Road, Bhopal are thankfully acknowledged.

The contributions made by Vinay Swarup Mehrotra, Professor and Head, Curriculum Development and Evaluation Centre (CDEC), Vipin Kumar Jain, Associate Professor and Head, Programme Planning and Monitoring Cell (PPMC) and Dipak Shudhalwar, Associate Professor, Department of Engineering & Technology, PSSCIVE in development of the curriculum for the employability skills are duly acknowledged.

The assistance provided by Durgesh Kumar Satankar, Computer Operator Grade II in typing and composing of the material is duly acknowledged.

PSSCIVE Team

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# 1. COURSE OVERVIEW

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## **COURSE TITLE: Agriculture – Gardener**

**A** Gardener in the Agriculture industry is very important job role related to landscaping and garden activity. Gardener performs the basic operations related to preparation of growing medium, seed bed, planting, transplanting and caring of plant and planting material. He is also responsible for tending lawns, trees, shrubs, ground covers. He/ she needs to be aware of the soil and nutrition requirement of plants, pest and diseases and their control, tools and equipment, garden components, styles and feature of garden. Gardener need to acquire skills in grafting, cutting, budding, training, pruning, weeding and housing of flowers and vegetables. Need to know use of basic tools and hand powered machinery such as pruners, cutters, lawn mowers, etc.

**COURSE OUTCOMES:** On completion of the course, students should be able to:

- Apply effective oral & written communication skills to interact with people & customers;
- Identify the principal components of a computer system;
- Demonstrate the basic skills of using computer;
- Demonstrate self-management skills;
- Demonstrate the ability to provide a self-analysis in context of entrepreneurial skills and abilities;
- Demonstrate the knowledge of the importance of green skills in meeting the challenges of sustainable development and environment protection;
- Communicate effectively with the client
- Identify the principal components of a computer system
- Identify and control hazards in the work place that pose a danger or threat to their safety or health.
- Identify and safe use of tools and equipment.
- Perform the various garden operations
- Identify the major group of ornamental plants.
- Identify and prepare media for growing potted plants
- Establish and maintain lawn.
- Demonstrate the procedure of plant propagations.
- Identify and control of insect – pests, diseases and weeds in garden.
- Identify features and components of garden.
- Establish and maintain garden.
- Administer first aid to a casualty with small cuts, grazes, bruises, external bleeding, minor burns and scalds, etc.

**COURSE REQUIREMENTS:** The learner should have the basic knowledge of science.

**COURSE LEVEL:** On completion of this course, a student can take up B. Voc. degree programme in university/college for course in Horticulture such as of Floriculture and landscape gardening or green house technology.

**COURSE DURATION:** **600 hrs**

Class 11	:	300 hrs
Class 12	:	300 hrs

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<b>Total</b>	<b>:</b>	<b>600 hrs</b>
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## 2. SCHEME OF UNITS

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11 and 12 opting for vocational subject along with general education subjects. The unit-wise distribution of hours and marks for Class 11 is as follows:

The unit-wise distribution of hours and marks for Class 11 is as follows:

<b>CLASS 11</b>			
	<b>Units</b>	<b>No. of Hours for Theory and Practical 160</b>	<b>Max. Marks for Theory and Practical 100</b>
<b>Part A</b>	<b>Employability Skills</b>		
	Unit 1: Communication Skills - III	25	10
	Unit 2: Self-management Skills -III	25	
	Unit 3: Information and Communication Technology Skills -III	20	
	Unit 4: Entrepreneurial Skills -III	25	
	Unit 5: Green Skills -III	15	
	<b>Total</b>	<b>110</b>	<b>10</b>
<b>Part B</b>	<b>Vocational Skills</b>		
	Unit 1: Introduction to Floriculture	20	40
	Unit 2: Nursery Management	40	
	Unit 3: Plant Propagation	40	
	Unit 4: Garden tools and equipments	30	
	Unit 5: Soil management and field preparation	35	
	<b>Total</b>	<b>165</b>	<b>40</b>
<b>Part C</b>	<b>Practical Work</b>		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	<b>Total</b>	<b>10</b>	<b>35</b>
<b>Part D</b>	<b>Project Work/Field Visit</b>		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
	<b>Total</b>	<b>15</b>	<b>15</b>
	<b>Grand Total</b>	<b>300</b>	<b>100</b>

The unit-wise distribution of hours and marks for Class 12 is as follows:

<b>CLASS 12</b>			
	<b>Units</b>	<b>No. of Hours for Theory and Practical 200</b>	<b>Max. Marks for Theory and Practical 100</b>
<b>Part A</b>	<b>Employability Skills</b>		
	Unit 1: Communication Skills -IV	25	10
	Unit 2: Self-management Skills - IV	25	
	Unit 3: Information and Communication Technology Skills - IV	20	
	Unit 4: Entrepreneurial Skills -IV	25	
	Unit 5: Green Skills -IV	15	
	<b>Total</b>	<b>110</b>	<b>10</b>
<b>Part B</b>	<b>Vocational Skills</b>		
	Unit 1: Nutrition and Irrigation	30	40
	Unit 2: Care and maintenance of garden	35	
	Unit 3: Establishment and maintenance of lawn	20	
	Unit 4: Basic landscape designing and garden component	40	
	Unit 5: Identification of ornamental plant	40	
	<b>Total</b>	<b>165</b>	<b>40</b>
<b>Part C</b>	<b>Practical Work</b>		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	<b>Total</b>	<b>10</b>	<b>35</b>
<b>Part D</b>	<b>Project Work/Field Visit</b>		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
	<b>Total</b>	<b>15</b>	<b>15</b>
	<b>Grand Total</b>	<b>300</b>	<b>100</b>

### 3. TEACHING/TRAINING ACTIVITIES

The teaching and training activities have to be conducted in classroom, laboratory/ workshops and field visits. Students should be taken to field visits for interaction with experts and to expose them to the various tools, equipment, materials, procedures and operations in the workplace. Special emphasis should be laid on the occupational safety, health and hygiene during the training and field visits.

## **CLASSROOM ACTIVITIES**

Classroom activities are an integral part of this course and interactive lecture sessions, followed by discussions should be conducted by trained vocational teachers. Vocational teachers should make effective use of a variety of instructional aids, such as audio-video materials, colour slides, charts, diagrams, models, exhibits, hand-outs, online teaching materials, etc. to transmit knowledge and impart training to the students.

## **PRACTICAL WORK IN LABORATORY/WORKSHOP**

Practical work may include but not limited to hands-on-training, simulated training, role play, case based studies, exercises, etc. Equipment and supplies should be provided to enhance hands-on learning experience of students. Only trained personnel should teach specialized techniques. A training plan that reflects tools, equipment, materials, skills and activities to be performed by the students should be submitted by the vocational teacher to the Head of the Institution.

## **FIELD VISITS/ EDUCATIONAL TOUR**

In field visits, children will go outside the classroom to obtain specific information from experts or to make observations of the activities. A checklist of observations to be made by the students during the field visits should be developed by the Vocational Teachers for systematic collection of information by the students on the various aspects. Principals and Teachers should identify the different opportunities for field visits within a short distance from the school and make necessary arrangements for the visits. At least three field visits should be conducted in a year.

## **4. ASSESSMENT AND CERTIFICATION**

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**U**pon successful completion of the course by the candidate, the Central/ State Examination Board for Secondary Education and the respective Sector Skill Council will certify the competencies.

The National Skills Qualifications Framework (NSQF) is based on outcomes referenced to the National Occupation Standards (NOSs), rather than inputs. The NSQF level descriptors, which are the learning outcomes for each level, include the process, professional knowledge, professional skills, core skills and responsibility. The assessment is to be undertaken to verify that individuals have the knowledge and skills needed to perform a particular job and that the learning programme undertaken has delivered education at a given standard. It should be closely linked to certification so that the individual and the employer could come to know the competencies acquired through the vocational subject or course. The assessment should be reliable, valid, flexible, convenient, cost effective and above all it should be fair and transparent. Standardized assessment tools should be used for assessment of knowledge of students. Necessary arrangements should be made for using technology in assessment of students.

### **KNOWLEDGE ASSESSMENT (THEORY)**

**Knowledge Assessment** should include two components: one comprising of internal assessment and second an external examination, including theory examination to be

conducted by the Board. The assessment tools shall contain components for testing the knowledge and application of knowledge. The knowledge test can be objective paper based test or short structured questions based on the content of the curriculum.

### WRITTEN TEST

It allows candidates to demonstrate that they have the knowledge and understanding of a given topic. Theory question paper for the vocational subject should be prepared by the subject experts comprising group of experts of academicians, experts from existing vocational subject experts/teachers, subject experts from university/colleges or industry. The respective Sector Skill Council should be consulted by the Central/State Board for preparing the panel of experts for question paper setting and conducting the examinations.

The blue print for the question paper may be as follows:

**Duration: 3 hrs**

**Max. Mark: 40**

	Typology of Question	No. of Questions			Marks
		Very Short Answer (1 mark)	Short Answer (2 Marks)	Long Answer (3 Marks)	
1.	Remembering – (Knowledge based simple recall questions, to know specific facts, terms, concepts, principles, or theories; identify, define or recite, information)	3	2	2	13
2.	Understanding – (Comprehension – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information)	2	3	2	14
3.	Application – (Use abstract information in concrete situation, to apply knowledge to new situations: Use given content to interpret a situation, provide an example, or solve a problem)	0	2	1	07
4.	High Order Thinking Skills – (Analysis & Synthesis – Classify, compare, contrast, or differentiate between different pieces of information; Organize and/ or integrate unique pieces of information from a variety of sources)	0	2	0	04
5.	Evaluation – (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	0	1	0	02
	<b>Total</b>	<b>5x1=5</b>	<b>10x2=20</b>	<b>5x3=15</b>	<b>40 (20 questions)</b>

### SKILL ASSESSMENT (PRACTICAL)

Assessment of skills by the students should be done by the assessors/examiners on the basis of practical demonstration of skills by the candidate, using a competency checklist. The competency checklist should be developed as per the National Occupation Standards (NOSs) given in the Qualification Pack for the Job Role to bring about necessary consistency in the quality of assessment across different sectors and Institutions. The student has to demonstrate competency against the performance criteria defined in the National Occupation Standards and the assessment will indicate that they are 'competent', or are 'not yet competent'. The assessors assessing the skills of the students should possess a current

experience in the industry and should have undergone an effective training in assessment principles and practices. The Sector Skill Councils should ensure that the assessors are provided with the training on the assessment of competencies.

Practical examination allows candidates to demonstrate that they have the knowledge and understanding of performing a task. This will include hands-on practical exam and viva voce. For practical, there should be a team of two evaluators – the subject teacher and the expert from the relevant industry certified by the Board or concerned Sector Skill Council. The same team of examiners will conduct the viva voce.

**Project Work** (individual or group project) is a great way to assess the practical skills on a certain time period or timeline. Project work should be given on the basis of the capability of the individual to perform the tasks or activities involved in the project. Projects should be discussed in the class and the teacher should periodically monitor the progress of the project and provide feedback for improvement and innovation. Field visits should be organised as part of the project work. Field visits can be followed by a small-group work/project work. When the class returns from the field visit, each group might be asked to use the information that they have gathered to prepare presentations or reports of their observations. Project work should be assessed on the basis of practical file or student portfolio.

**Student Portfolio** is a compilation of documents that supports the candidate's claim of competence. Documents may include reports, articles, photos of products prepared by students in relation to the unit of competency.

**Viva voce** allows candidates to demonstrate communication skills and content knowledge. Audio or video recording can be done at the time of viva voce. The number of external examiners would be decided as per the existing norms of the Board and these norms should be suitably adopted/adapted as per the specific requirements of the vocational subject. Viva voce should also be conducted to obtain feedback on the student's experiences and learning during the project work/field visits.

## 5. UNIT CONTENTS

### CLASS 11

#### Part A: Employability Skills

S.No.	Units	Duration (Hrs)
1.	Communication Skills III	25
2.	Self-management Skills III	25
3.	Information and Communication Technology Skills III	20
4.	Entrepreneurial Skills III	25
5.	Green Skills III	15
	<b>Total</b>	<b>110</b>

<b>Unit 1: Communication Skill – III</b>			
<b>Learning Outcome</b>	<b>Theory (10 hrs)</b>	<b>Practical (15 hrs)</b>	<b>Duration (25 Hrs)</b>
1. Demonstrate knowledge of various methods of communication	1. Methods of communication - Verbal - Non-verbal - Visual	1. Writing pros and cons of written, verbal and non-verbal communication 2. Listing do's and don'ts for avoiding common body language mistakes	<b>05</b>
2. Identify specific communication styles	1. Communication styles- assertive, aggressive, passive-aggressive, submissive, etc.	1. Observing and sharing communication styles of friends, teachers and family members and adapting the best practices 2. Role plays on communication styles.	<b>10</b>
3. Demonstrate basic writing skills	1. Writing skills to the following: • Sentence • Phrase • Kinds of Sentences • Parts of Sentence • Parts of Speech • Articles • Construction of a Paragraph	1. Demonstration and practice of writing sentences and paragraphs on topics related to the subject	<b>10</b>
<b>Total</b>			<b>25</b>

<b>Unit 2: Self-management Skills – III</b>			
<b>Learning Outcome</b>	<b>Theory (10 hrs)</b>	<b>Practical (15 hrs)</b>	<b>Duration (25 Hrs)</b>
1. Demonstrate impressive appearance and grooming	1. Describe the importance of dressing appropriately, looking decent and positive body language 2. Describe the term grooming 3. Prepare a personal grooming checklist 4. Describe the techniques of self-exploration	1. Demonstration of impressive appearance and groomed personality 2. Demonstration of the ability to self- explore	<b>10</b>
2. Demonstrate team work skills	1. Describe the important factors that influence in team building 2. Describe factors influencing team work	1. Group discussion on qualities of a good team 2. Group discussion on strategies that are adopted for team building and team work	<b>10</b>

3. Apply time management strategies and techniques	1, Meaning and importance of time management – setting and prioritizing goals, creating a schedule, making lists of tasks, balancing work and leisure, using different optimization tools to break large tasks into smaller tasks.	1. Game on time management 2. Checklist preparation 3. To-do-list preparation	<b>05</b>
<b>Total</b>			<b>25</b>

<b>Unit 3: Information and Communication Technology Skills - III</b>			
<b>Learning Outcome</b>	<b>Theory (08 hrs)</b>	<b>Practical (12 hrs)</b>	<b>Duration (20 Hrs)</b>
1. Create a document on word processor	1. Introduction to word processing. 2. Software packages for word processing. 3. Opening and exiting the word processor. 4. Creating a document	1. Demonstration and practice of the following: <ul style="list-style-type: none"> <li>• Listing the features of word processing</li> <li>• Listing the software packages for word processing</li> <li>• Opening and exit the word processor</li> <li>• Creating a document</li> </ul>	<b>10</b>
2. Edit, save and print a document in word processor	1. Editing text 2. Wrapping and aligning the text 3. Font size, type and face. 4. Header and Footer 5. Auto correct 6. Numbering and bullet 7. Creating table 8. Find and replace 9. Page numbering. 10. Printing document. 11. Saving a document in various formats.	1. Demonstration and practising the following: <ul style="list-style-type: none"> <li>• Editing the text</li> <li>• Word wrapping and alignment</li> <li>• Changing font type, size and face</li> <li>• Inserting header and footer</li> <li>• Removing header and footer</li> </ul> 1. Using autocorrect option 2. Insert page numbers and bullet 3. Save and print a document	<b>10</b>
<b>Total</b>			<b>20</b>

<b>Unit 4: Entrepreneurial Skills - III</b>			
<b>Learning Outcome</b>	<b>Theory</b>	<b>Practical</b>	<b>Duration</b>

	(10 hrs)	(15 hrs)	(25 Hrs)
1. Describe the significance of entrepreneurial values and attitude	<ol style="list-style-type: none"> <li>1. Values in general and entrepreneurial values</li> <li>2. Entrepreneurial value orientation with respect to innovativeness, independence, outstanding performance and respect for work</li> </ol>	<ol style="list-style-type: none"> <li>1. Listing of entrepreneurial values by the students.</li> <li>2. Group work on identification of entrepreneurial values and their roles after listing or reading 2-3 stories of successful entrepreneur</li> <li>3. Exhibiting entrepreneurial values in Ice breaking, rapport building, group work and home assignments</li> </ol>	<b>10</b>
2. Demonstrate the knowledge of attitudinal changes required to become an entrepreneur	<ol style="list-style-type: none"> <li>1. Attitudes in general and entrepreneurial attitudes</li> <li>2. Using imagination/ intuition</li> <li>3. Tendency to take moderate risk</li> <li>4. Enjoying freedom of expression and action</li> <li>5. Looking for economic opportunities</li> <li>6. Believing that we can change the environment</li> <li>7. Analyzing situation and planning action</li> <li>8. Involving in activity</li> </ol>	<ol style="list-style-type: none"> <li>1. Preparing a list of factors that influence attitude in general and entrepreneurial attitude</li> <li>2. Demonstrating and identifying own entrepreneurial attitudes during the following micro lab activities like thematic appreciation test</li> <li>3. Preparing a short write-up on "who am I"</li> <li>4. Take up a product and suggest how its features can be improved</li> <li>5. Group activity for suggesting brand names, names of enterprises, etc.</li> </ol>	<b>15</b>
<b>Total</b>			<b>25</b>

<b>Unit 5: Green Skills - III</b>			
<b>Learning Outcome</b>	<b>Theory (07 hrs)</b>	<b>Practical (08 hrs)</b>	<b>Duration (15 Hrs)</b>
1. Describe importance of main sector of green economy	<ol style="list-style-type: none"> <li>1. Main sectors of green economy- E-waste management, green transportation, renewal energy, green construction, water management</li> <li>2. Policy initiatives for greening economy in India</li> </ol>	<ol style="list-style-type: none"> <li>1. Preparing a poster on any one of the sectors of green economy</li> <li>2. Writing a two-page essay on important initiatives taken in India for promoting green economy</li> </ol>	<b>08</b>

2. Describe the major green Sectors/Areas and the role of various stakeholder in green economy	1. Stakeholders in green economy 2. Role of government and private agencies in greening cities, buildings, tourism, industry, transport, renewable energy, waste management, agriculture, water, forests and fisheries	1. Preparing posters on green Sectors/Areas: cities, buildings, tourism, industry, transport, renewable energy, waste management, agriculture, water, forests and fisheries	<b>07</b>
<b>Total</b>			<b>15</b>

## CLASS 11

### Part B: Vocational Skills

S.No.	Units	Duration (Hrs)
1.	Unit 1: Introduction to Floriculture	20
2.	Unit 2: Introduction to Nursery Management	40
3.	Unit 3: Plant Propagation	40
4.	Unit 4: Garden tools and equipments	30
5.	Unit 5: Soil management and field preparation	35
	<b>Total</b>	<b>165</b>

## CLASS 11

### Unit 1: Introduction to Floriculture

Learning Outcome	Theory (15 hrs)	Practical (05hrs)	Duration (20 Hrs)
1. Describe floriculture, importance, present status and prospects	1. Define floriculture 2. Importance of flowers in daily life 3. Area and production of major flowers in India 4. Major flower producing states in India 5. Future possibilities of flower cultivation in India	1. Enlist major ornamental plants in India 2. Enlist major sates producing flowering and ornamental plants.	<b>10</b>
2. Classify ornamental plants	1. Define loose flowers 2. Define cut flowers 3. Classify ornamental plants	1. Enlist different types of ornamental plants in chart 2. Identification of loose and cut flowers 3. Enlist the types of classification of ornamental plants	<b>10</b>
<b>Total</b>			<b>20</b>

<b>Unit 2: Nursery Management</b>			
<b>Learning Outcome</b>	<b>Theory (15 hrs)</b>	<b>Practical (25 hrs)</b>	<b>Duration (40 Hrs)</b>
1. Describe Nursery and its importance	<ol style="list-style-type: none"> <li>1. Define nursery</li> <li>2. Importance of Nursery</li> <li>3. Criteria to select nursery site</li> <li>4. Classification of different types of nursery</li> <li>5. Mother block</li> <li>6. Preparation of nursery beds</li> <li>7. Precaution taken during preparation of nursery beds</li> </ol>	<ol style="list-style-type: none"> <li>1. Enlist important plants raises in nursery</li> <li>2. Enlist the types of nursery</li> <li>3. Identification of growing media</li> <li>4. Demonstration of preparation of nursery beds</li> <li>5. Draw a layout of nursery showing its features</li> </ol>	<b>15</b>
2. Identify growing media	<ol style="list-style-type: none"> <li>1. Define growing media</li> <li>2. Types of growing media</li> <li>3. Plant growth regulators</li> <li>4. Types of plant growth regulators</li> </ol>	<ol style="list-style-type: none"> <li>1. Identification of growing media</li> <li>2. Enlist plant growth regulators used in nursery</li> </ol>	<b>12</b>
3. Grow seed and planting material	<ol style="list-style-type: none"> <li>1. Methods of seed sowing</li> <li>2. Precaution taken during seed sowing</li> <li>3. Potting mixture</li> <li>4. Procedure of potting, de potting and re potting</li> <li>5. Application of manure and fertilizer to nursery plants</li> <li>6. Care and maintenance of nursery plants</li> </ol>	<ol style="list-style-type: none"> <li>1. Demonstration of the process of seed sowing</li> <li>2. Preparation of potting mixture</li> <li>3. Demonstration of procedure for potting, de potting and re potting</li> <li>4. Demonstration of application of manure and fertilizers in nursery plants</li> </ol>	<b>13</b>
<b>Total</b>			<b>40</b>

<b>Unit 3: Plant Propagation</b>			
<b>Learning Outcome</b>	<b>Theory (15 hrs)</b>	<b>Practical (25 hrs)</b>	<b>Duration (40 Hrs)</b>
1. Describe propagation and different methods of propagation	<ol style="list-style-type: none"> <li>1. Define propagation</li> <li>2. Definition of root stock</li> <li>3. Definition of scion</li> <li>4. Differentiate between sexual and asexual propagation</li> <li>5. Merits and Demits of sexual propagation</li> <li>6. What are different methods of asexual</li> </ol>	<ol style="list-style-type: none"> <li>1. Identification of root stock and scion</li> <li>2. Enlist method of propagation</li> </ol>	<b>05</b>

<b>Unit 3: Plant Propagation</b>			
<b>Learning Outcome</b>	<b>Theory (15 hrs)</b>	<b>Practical (25 hrs)</b>	<b>Duration (40 Hrs)</b>
	propagation 7. Describe sexual propagation		
2. Propagate plants by cutting	1. Types of cutting stem, root and leaf Merits and Demits of sexual propagation 2. Precautions to be taken while preparing and planting, cuttings 3. Merits and Demits of sexual 4. Procedure for preparing cuttings of stem, root and leaf	1. Demonstration and practice of the procedure of preparing cuttings	<b>07</b>
3. Propagate plant by layering	1. Types of layering 2. Precaution to be taken while performing layering 3. Procedure for layering	1. Demonstration and practice of the procedure of layering	<b>07</b>
4. Propagate plant by grafting	1. Types of grafting 2. Selection of scion 3. Precaution to be taken while prepare graft 4. Procedure of preparing graft	1. Demonstration and practice of the procedure of grafting	<b>7</b>
5. Propagate plant by budding	1. Types of budding 2. Precaution to be taken while preparing budding 3. Procedure for preparing budding.	1. Demonstration and practice of the procedure of budding	<b>07</b>
6. Multiplication of specialized organs	1. Procedure for multiplication of plants through specialized organ– bulbs, corm, tuber, rhizome, suckers, etc.	1. Multiply specialized structures -bulbs corm, Tuber, rhizome, suckers, etc.	<b>07</b>
<b>Total</b>			<b>40</b>

<b>Unit 4: Garden Tools and Equipments</b>			
<b>Learning Outcome</b>	<b>Theory (10hrs)</b>	<b>Practical (20 hrs)</b>	<b>Duration (30Hrs)</b>
1. Identify tools and Equipment used in gardening	1. Different tools and equipments used in garden 2. Utility of tools and equipment used in	1. Identification of tools and equipment used in garden. 2. Demonstration of	<b>15</b>

	garden 3. Precaution taken during use of tools and equipments	safe use of different tools and equipment for various purpose 3. Demonstration of the knowledge of undertaking basic safety checks before operation of all tools and equipments	
2. Maintain garden tools and equipment	1. Procedure of maintenance of garden tools and equipment	1. Demonstration of the procedure for maintaining garden tools and equipment	<b>08</b>
3. Keep records of tools and equipment	1. Records kept for inventory and maintenance of tools and equipment	1. Recording information about gardening tools and equipment and their maintenance	<b>07</b>
<b>Total</b>			<b>30</b>

### Unit 5: Soil management and field preparation

Learning Outcome	Theory (12hrs)	Practical (23hrs)	Duration (35 Hrs)
1. Recognise importance of soil properties for productivity	1. Define soil and soil genesis 2. Soil properties 3. Soils of India 4. Characteristics of major Indian soils	1. Enlist the soil of India 2. Enlist the state wise distribution of soil	<b>07</b>
2. Demonstrate soil reclamation and soil sampling	1. Soil reclamation 2. Methods of reclamation 3. Procedure of soil sampling 4. Interpretate result of soil testing	1. Enlist the method of soil reclamation 2. Demonstration of procedure for taken soil sample	<b>08</b>
3. Prepare field for garden	1. Preparation of field for gardening 2. Selection of site for growing flowers 3. Optimum agro-climatic conditions for growing ornamental plants	1. Identification of tools and equipment used for field preparation 2. Demonstration of the procedure for field preparation.	<b>20</b>
<b>Total</b>			<b>35</b>

## CLASS 12

### Part A-Employability Skills

S.No.	Units	Duration (Hrs)
1.	Communication Skills IV	25
2.	Self-management Skills IV	25
3.	Information and Communication Technology Skills IV	20
4.	Entrepreneurial Skills IV	25
5.	Green Skills IV	15
	<b>Total</b>	<b>110</b>

Unit 1: Communication Skills – IV			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Total Duration (25 Hrs)
1. Describe the steps to active listening skills	1. Importance of active listening at workplace 2. Steps to active listening	1. Demonstration of the key aspects of becoming active listener 2. Preparing posters of steps for active listening	<b>10</b>
2. Demonstrate basic writing skills	2. Writing skills to the following: <ul style="list-style-type: none"> <li>• Sentence</li> <li>• Phrase</li> <li>• Kinds of Sentences</li> <li>• Parts of Sentence</li> <li>• Parts of Speech</li> <li>• Articles</li> <li>• Construction of a Paragraph</li> </ul>	1. Demonstration and practice of writing sentences and paragraphs on topics related to the subject	<b>15</b>
<b>Total</b>			<b>25</b>

Unit 2: Self-management Skills – IV			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Total Duration (25 Hrs)
1. Describe the various factors influencing self-motivation	1. Finding and listing motives (needs and desires); 2. Finding sources of motivation and inspiration (music, books, activities);expansive thoughts; living fully in the present moment; dreaming big	1.Group discussion on identifying needs and desire 2. Discussion on sources of motivation and inspiration	<b>10</b>

2. Describe the basic personality traits, types and disorders	<ol style="list-style-type: none"> <li>1. Describe the meaning of personality</li> <li>2. Describe how personality influence others</li> <li>3. Describe basic personality traits</li> <li>4. Describe common personality disorders- paranoid, antisocial, schizoid, borderline, narcissistic, avoidant, dependent and obsessive</li> </ol>	1. Demonstrate the knowledge of different personality types	<b>15</b>
<b>Total</b>			<b>25</b>

<b>Unit 3: Information and Communication Technology Skills - IV</b>			
<b>Learning Outcome</b>	<b>Theory (10 hrs)</b>	<b>Practical (15 hrs)</b>	<b>Total Duration (25 Hrs)</b>
1. Perform tabulation using spreadsheet application	<ol style="list-style-type: none"> <li>1. Introduction to spreadsheet application</li> <li>2. Spreadsheet applications</li> <li>3. Creating a new worksheet</li> <li>4. Opening workbook and entering text</li> <li>5. Resizing fonts and styles</li> <li>6. Copying and moving</li> <li>7. Filter and sorting</li> <li>8. Formulas and functions</li> <li>9. Password protection.</li> <li>10. Printing a spreadsheet.</li> <li>11. Saving a spreadsheet in various formats.</li> </ol>	1. Demonstration and practice on the following: <ul style="list-style-type: none"> <li>• Introduction to the spreadsheet application</li> <li>• Listing the spreadsheet applications</li> <li>• Creating a new worksheet</li> <li>• Opening the workbook and enter text</li> <li>• Resizing fonts and styles</li> <li>• Copying and move the cell data</li> <li>• Sorting and Filter the data</li> <li>• Applying elementary formulas and functions</li> <li>• Protecting the spreadsheet with password</li> <li>• Printing a spreadsheet</li> <li>• Saving the spreadsheet in various formats.</li> </ul>	<b>10</b>
2. Prepare presentation using presentation application	<ol style="list-style-type: none"> <li>1. Introduction to presentation</li> <li>2. Software packages for presentation</li> <li>3. Creating a new presentation</li> <li>4. Adding a slide</li> <li>5. Deleting a slide</li> <li>6. Entering and editing</li> </ol>	1. Demonstration and practice on the following: <ul style="list-style-type: none"> <li>• Listing the software packages for presentation</li> <li>• Explaining the features of presentation</li> <li>• Creating a new</li> </ul>	<b>15</b>

	text 7. Formatting text 8. Inserting clipart and images 9. Slide layout 10. Saving a presentation 11. Printing a presentation document.	presentation <ul style="list-style-type: none"> <li>• Adding a slide to presentation.</li> <li>• Deleting a slide</li> <li>• Entering and edit text</li> <li>• Formatting text</li> <li>• Inserting clipart and images</li> <li>• Sliding layout</li> <li>• Saving a presentation</li> <li>• Printing a presentation document</li> </ul>	
<b>Total</b>			<b>25</b>

**Unit 4: Entrepreneurial Skills - IV**

<b>Learning Outcome</b>	<b>Theory (10 hrs)</b>	<b>Practical (15 hrs)</b>	<b>Total Duration (25 Hrs)</b>
1. Identify the general and entrepreneurial behavioural competencies	1. Barriers to becoming entrepreneur 2. Behavioural and entrepreneurial competencies – adaptability/decisiveness, initiative/perseverance, interpersonal skills, organizational skills, stress management, valuing service and diversity	1. Administering self-rating questionnaire and score responses on each of the competencies 2. Collect small story/ anecdote of prominent successful entrepreneurs 3. Identify entrepreneurial competencies reflected in each story and connect it to the definition of behavioural competencies 4. Preparation of competencies profile of students	<b>10</b>
2. Demonstrate the knowledge of self-assessment of behavioural competencies	1. Entrepreneurial competencies in particular: self-confidence, initiative, seeing and acting on opportunities, concern for quality, goal setting and risk taking, problem solving and creativity, systematic planning and efficiency, information seeking, persistence,	1. Games and exercises on changing entrepreneurial behaviour and development of competencies for enhancing self-confidence, problem solving, goal setting, information seeking, team building and creativity	<b>15</b>

<b>Unit 4: Entrepreneurial Skills - IV</b>			
<b>Learning Outcome</b>	<b>Theory (10 hrs)</b>	<b>Practical (15 hrs)</b>	<b>Total Duration (25 Hrs)</b>
	influencing and negotiating, team building		
<b>Total</b>			<b>25</b>

<b>Unit 5: Green Skills - IV</b>			
<b>Learning Outcome</b>	<b>Theory (05 hrs)</b>	<b>Practical (10 hrs)</b>	<b>Total Duration (15 Hrs)</b>
1. Identify the role and importance of green jobs in different sectors	<ol style="list-style-type: none"> <li>1. Role of green jobs in toxin-free homes,</li> <li>2. Green organic gardening, public transport and energy conservation,</li> <li>3. Green jobs in water conservation</li> <li>4. Green jobs in solar and wind power, waste reduction, reuse and recycling of wastes,</li> <li>5. Green jobs in green tourism</li> <li>6. Green jobs in building and construction</li> <li>7. Green jobs in appropriate technology</li> <li>8. Role of green jobs in Improving energy and raw materials use</li> <li>9. Role of green jobs in limiting greenhouse gas emissions</li> <li>10. Role of green jobs minimizing waste and pollution</li> <li>11. Role of green jobs in protecting and restoring ecosystems</li> <li>12. Role of green jobs in support adaptation to the effects of climate change</li> </ol>	<ol style="list-style-type: none"> <li>1. Listing of green jobs and preparation of posters on green job profiles</li> <li>2. Prepare posters on green jobs.</li> </ol>	<b>15</b>
<b>Total</b>			<b>15</b>

## CLASS 12

### Part B–Vocational Skills

S.No.	Units	Duration (Hrs)
1.	Nutrition and Irrigation	30
2.	Care and maintenance of garden	35
3.	Establishment and maintenance of lawn	20
4.	Basic landscape designing and garden component	40
5.	Identification of ornamental plant	40
	<b>Total</b>	<b>165</b>

<b>Unit 1: Nutrition and Irrigation</b>			
Learning Outcome	Theory (12 hrs)	Practical (18 hrs)	Duration (30 Hrs)
1. Identify manures and fertilizer	1. Define manures 2. Define fertilizers 3. Classification of manures and fertilizers 4. Use of manures and fertilizers 5. Define Bio-fertilizers 6. Describe vermicomposting	1. Identification of manures 2. Identification of fertilizers 3. Identification of Bio-fertilizers 4. Enlist the name and percentage of nutrients in fertilizers 5. Enlist the nutrients of different type of manure.	<b>10</b>
2. Apply manures and fertilizers	1. How and when manure can be applied 2. Describe method of manure and fertilizers application 3. Application of bio-fertilizers	1. Demonstration of methods of application of fertilizers 2. Demonstration of the application of manure 3. Demonstration of the application of bio-fertilizers	<b>10</b>
3. Demonstrate methods of irrigation	1. Methods of irrigation 2. Advantages and disadvantage of different methods of irrigation 3. Drainage and its importance 4. Drips and sprinkler irrigation systems	1. Identification of the equipment and parts used in Drip irrigation 2. Identification of components of sprinkler irrigation 3. Demonstration of different irrigation method	<b>10</b>
<b>Total</b>			<b>30</b>

<b>Unit 2: Care and Maintenance of Garden</b>			
<b>Learning Outcome</b>	<b>Theory (15 hrs)</b>	<b>Practical (25hrs)</b>	<b>Duration (35 Hrs)</b>
1. Demonstrate Integrated Insect pest management	<ol style="list-style-type: none"> <li>1. Pest management</li> <li>2. Nature of insect damage</li> <li>3. Control of insect pests                             <ol style="list-style-type: none"> <li>a. Cultural method</li> <li>b. Bio-logical control</li> <li>c. Chemical control</li> </ol> </li> <li>4. Common insect pests of ornamental plants</li> <li>5. Common insecticides and their uses</li> </ol>	<ol style="list-style-type: none"> <li>1. Identification of common insect pest of ornamental crops</li> <li>2. Identification of common insecticides</li> <li>3. Enlist the cultural methods use for insect pest control</li> <li>4. Demonstration the application of insecticides</li> <li>5. Demonstration of safety measure taken during application of pesticides.</li> </ol>	<b>10</b>
2. Demonstrate Integrated disease management	<ol style="list-style-type: none"> <li>1. Define disease</li> <li>2. Symptoms of common diseases of ornamental plants</li> <li>3. Important diseases of ornament plants</li> <li>4. Integrated disease management:                             <ol style="list-style-type: none"> <li>a. Chemical control</li> <li>b. Cultural methods</li> <li>c. Bio-control</li> </ol> </li> <li>5. Application of fungicides</li> </ol>	<ol style="list-style-type: none"> <li>1. Enlist common diseases of ornamental plants</li> <li>2. Identification of common diseases of ornamental crops</li> <li>3. Identification of common fungicides</li> <li>4. Demonstration of the application of fungicides</li> <li>5. Enlist cultural methods used for disease management.</li> </ol>	<b>08</b>
3. Demonstrate integrated weed management	<ol style="list-style-type: none"> <li>1. Define weed</li> <li>2. Common weeds of ornamental crops</li> <li>3. Methods of weed control                             <ol style="list-style-type: none"> <li>a. Cultural and physical method of weed control</li> <li>b. Chemical control</li> </ol> </li> <li>4. Types of herbicides use for weed control</li> </ol>	<ol style="list-style-type: none"> <li>1. Identification of common weeds</li> <li>2. Enlist the herbicides used for weed control</li> <li>3. Identification of common herbicides</li> <li>4. Demonstration of cultural methods for weed control</li> </ol>	<b>07</b>
4. Understand common cultural operations	<ol style="list-style-type: none"> <li>1. Important cultural operations viz., Harrowing, mulching, staking, earthing up, training, pruning</li> </ol>	<ol style="list-style-type: none"> <li>1. Identification of tools and equipment used in cultural operation</li> <li>2. Demonstration of</li> </ol>	<b>10</b>

<b>Unit 2: Care and Maintenance of Garden</b>			
<b>Learning Outcome</b>	<b>Theory (15 hrs)</b>	<b>Practical (25hrs)</b>	<b>Duration (35 Hrs)</b>
	pinching, dis budding, etc.	training, pruning, staking and pinching.	
<b>Total</b>			<b>35</b>

<b>Unit 3: Establishment and Maintenance of Lawn</b>			
<b>Learning Outcome</b>	<b>Theory (08 hrs)</b>	<b>Practical (12hrs)</b>	<b>Duration (20 Hrs)</b>
1. Select the site and establish lawn	<ol style="list-style-type: none"> <li>1. Definition of lawn</li> <li>2. Importance of lawn</li> <li>3. Criteria for selection of site</li> <li>4. Preparation of land for planting of grasses</li> <li>5. Important grass varieties</li> <li>6. Selection of the suitable variety</li> <li>7. Methods used for planting of lawn grass</li> </ol>	<ol style="list-style-type: none"> <li>1. Enlist the criteria for selection of site</li> <li>2. Demonstration of preparation of land for lawn</li> <li>3. Demonstration of different planting methods of grasses</li> <li>4. Identification of common grasses for lawn</li> </ol>	<b>10</b>
2. Care and maintenance of lawn	<ol style="list-style-type: none"> <li>1. Different operations performed for maintaining lawns</li> <li>2. Irrigation and fertilizers application in lawn</li> </ol>	<ol style="list-style-type: none"> <li>1. Demonstration of mowing and rolling</li> <li>2. Demonstration of weeding</li> <li>3. Demonstration of process of scraping and racking</li> <li>4. Demonstration of application of manures and fertilizers</li> <li>5. Demonstration of irrigation procedures</li> </ol>	<b>10</b>
<b>Total</b>			<b>20</b>

<b>Unit 4: Basic landscape designing and garden component</b>			
<b>Learning Outcome</b>	<b>Theory (15hrs)</b>	<b>Practical (25hrs)</b>	<b>Duration (40 Hrs)</b>
1. Landscape gardening and its importance	<ol style="list-style-type: none"> <li>1. Define landscaping</li> <li>2. Aims of landscaping</li> <li>3. Principles of landscaping</li> </ol>	<ol style="list-style-type: none"> <li>1. Enlist principles of landscaping</li> <li>2. Enlist features of garden</li> </ol>	<b>15</b>

<b>Unit 4: Basic landscape designing and garden component</b>			
<b>Learning Outcome</b>	<b>Theory (15hrs)</b>	<b>Practical (25hrs)</b>	<b>Duration (40 Hrs)</b>
	4. Scope of landscaping 5. Describe features of garden 6. Criteria for selection of site for landscape gardening 7. Landscaping of educational institution 8. Landscaping a small home ground	3. Enlist the criteria for selection of site for gardening 4. Organisation of visit to show garden components	
2. Styles of gardening	1. Different styles of garden 2. Importance of garden designs 3. Features of Japanese garden	1. Enlist different styles of garden 2. Identification of formal and informal gardens 3. Enlist feature of Japanese garden	<b>15</b>
3. Describe Indoor gardening	1. Definition of indoor gardening 2. House plant and indoor gardening 3. Describe gardening in: a. Hanging baskets b. Window garden c. Miniature garden	1. Identification of the foliage, succulents and creepers used in indoor garden 2. Identification of different types of container used indoor gardens 3. Demonstration of planting of foliage plant in pot	<b>10</b>
<b>Total</b>			<b>40</b>

<b>Unit 5: Identification of Ornamental Plant</b>			
<b>Learning Outcome</b>	<b>Theory (15 hrs)</b>	<b>Practical (25 hrs)</b>	<b>Duration (40 Hrs)</b>
1. Identify ornamental trees, shrubs, seasonal flowers, flowering bulbs, and aquatic plants	1. What are important ornamental plants 2. Classification of seasonal flowers 3. Classification of flowering and foliage trees 4. Classification of shrubs 5. Common Bulbuls plant 6. Important aquatic plant	1. Enlist common flowering trees 2. Enlist common shrubs 3. Enlist common seasonal flowers 4. Identification of important trees 5. Identification of common shrubs 6. Identification of seasonal flowers	<b>20</b>

<b>Unit 5: Identification of Ornamental Plant</b>			
<b>Learning Outcome</b>	<b>Theory (15 hrs)</b>	<b>Practical (25 hrs)</b>	<b>Duration (40 Hrs)</b>
2. Identify Hedge and Edge plants	1. Important Hedge plants 2. Common Edge plants	1. Identification of Hedge plants 2. Identification of Edge plants	<b>10</b>
3. Identify climbers	1. Define climbers and creepers 2. Importance of climbers/ creepers in landscape gardening 3. Climbers/ creepers used in landscape gardening	1. Enlist important climbers used in landscape gardening 2. Identification of common climbers/ creepers	<b>10</b>
<b>Total</b>			<b>40</b>

## 6. ORGANISATION OF FIELD VISITS

In a year, at least 3 field visits/educational tours should be organised for the students to expose them to the activities in the workplace.

Visit a garden and observe the following: Location, Site, net house, tools and equipment, types of plant, Pot yard, type of garden, lawn, Seed bed, Nursery bed, Water tank/ Tube well, Gate and fencing. During the visit, students should obtain the following information from the owner or the supervisor of the nursery:

1. Area under garden and its layout
2. Types of garden
3. Features of garden
4. Tools and equipment used
5. Maintenance mechanism of garden
6. Types of plant – trees, climbers, annuals and perennials
7. Method of irrigation
8. Method of propagation of plant
9. Whether plants raised by micro propagation
10. Manpower engaged
11. Total expenditure of garden maintenance
12. Any other information
13. Any other information

## 7. LIST OF EQUIPMENT AND MATERIALS

The list given below is suggestive and an exhaustive list should be prepared by the vocational teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

1. Dutch Hand Hoe
2. Farmyard Manure
3. Fertilizers
4. Garden Hand Tools
5. Garden Hoes
6. Garden Knife
7. Garden Rake
8. Garden/Digging Fork
9. Garden/Digging Spade
10. Hand Screens/Sieves
11. Hoe
12. Hori Knife
13. Knapsack Sprayer
14. Leaf Rake
15. Plastics Baskets
16. Polybags (different sizes)
17. Pruners
18. Pruning Knife
19. Pruning Shears
20. Spade
21. Sanitizers
22. Secateurs
23. Seed Cleaner
24. Seed Treating Equipment
25. Shovels and Specialty Spades
26. Soil Scoop
27. Sprinkler Irrigation Unit
28. Trowels
29. Vermicompost
30. Water Hose
31. Watering Can
32. Wheelbarrow or Garden Cart
33. Drip Irrigation Unit

## 8. VOCATIONAL TEACHER'S/ TRAINER'S QUALIFICATION AND GUIDELINES

Qualification and other requirements for appointment of vocational teachers/trainers on contractual basis should be decided by the State/UT. The suggestive qualifications and minimum competencies for the vocational teacher should be as follows:

S. No.	Qualification	Minimum Competencies	Age Limit
1.	Post-graduation in Horticulture from a recognized Institute/University, with at least 1 year work experience	<ul style="list-style-type: none"> <li>• Effective communication skills (oral and written)</li> <li>• Basic computing skills.</li> </ul>	18-37 years (as on Jan. 01 (year))  Age relaxation to be provided as per Govt. rules

Vocational Teachers/Trainers form the backbone of Vocational Education being imparted as an integral part of Rashtriya Madhyamik Shiksha Abhiyan (RMSA). They are directly involved in teaching of vocational subjects and also serve as a link between the industry and the schools for arranging industry visits, On-the-Job Training (OJT) and placement.

These guidelines have been prepared with an aim to help and guide the States in engaging quality Vocational Teachers/Trainers in the schools. Various parameters that need to be looked into while engaging the Vocational Teachers/Trainers are mode and procedure of selection of Vocational Teachers/Trainers, Educational Qualifications, Industry Experience, and Certification/Accreditation.

The State may engage Vocational Teachers/Trainers in schools approved under the component of Vocationalisation of Secondary and Higher Secondary Education under RMSA in the following ways:

- (i) Directly as per the prescribed qualifications and industry experience suggested by the PSS Central Institute of Vocational Education(PSSCIVE), NCERT or the respective Sector Skill Council(SSC)

OR

- (ii) Through accredited Vocational Training Providers accredited under the National Quality Assurance Framework (NQAF\*) approved by the National Skill Qualification Committee on 21.07.2016. If the State is engaging Vocational Teachers/Trainers through the Vocational Training Provider (VTP), it should ensure that VTP should have been accredited at NQAF Level 2 or higher.

\* *The National Quality Assurance Framework (NQAF) provides the benchmarks or quality criteria which the different organisations involved in education and training must meet in order to be accredited by competent bodies to provide government-funded education and training/skills activities. This is applicable to all organizations offering NSQF-compliant qualifications.*

The educational qualifications required for being a Vocational Teacher/Trainer for a particular job role are clearly mentioned in the curriculum for the particular NSQF compliant job role. The State should ensure that teachers / trainers deployed in the schools have relevant technical competencies for the NSQF qualification being delivered. The Vocational Teachers/Trainers preferably should be certified by the concerned Sector Skill Council for the particular Qualification Pack/Job role which he will be teaching. Copies of relevant certificates and/or record of experience of the teacher/trainer in the industry should be kept as record.

To ensure the quality of the Vocational Teachers/Trainers, the State should ensure that a standardized procedure for selection of Vocational Teachers/Trainers is followed. The selection procedure should consist of the following:

- (i) Written test for the technical/domain specific knowledge related to the sector;
- (ii) Interview for assessing the knowledge, interests and aptitude of trainer through a panel of experts from the field and state representatives; and
- (iii) Practical test/mock test in classroom/workshop/laboratory.

In case of appointment through VTPs, the selection may be done based on the above procedure by a committee having representatives of both the State Government and the VTP.

The State should ensure that the Vocational Teachers/Trainers who are recruited should undergo induction training of 20 days for understanding the scheme, NSQF framework and Vocational Pedagogy before being deployed in the schools.

The State should ensure that the existing trainers undergo in-service training of 5 days every year to make them aware of the relevant and new techniques/approaches in their sector and understand the latest trends and policy reforms in vocational education.

The Head Master/Principal of the school where the scheme is being implemented should facilitate and ensure that the Vocational Teachers/Trainers:

- (i) Prepare session plans and deliver sessions which have a clear and relevant purpose and which engage the students;
- (ii) Deliver education and training activities to students, based on the curriculum to achieve the learning outcomes;
- (iii) Make effective use of learning aids and ICT tools during the classroom sessions;
- (iv) Engage students in learning activities, which include a mix of different methodologies, such as project based work, team work, practical and simulation based learning experiences;
- (v) Work with the institution's management to organise skill demonstrations, site visits, on-job trainings, and presentations for students in cooperation with industry, enterprises and other workplaces;
- (vi) Identify the weaknesses of students and assist them in upgradation of competency;
- (vii) Cater to different learning styles and level of ability of students;
- (viii) Assess the learning needs and abilities, when working with students with different abilities
- (ix) Identify any additional support the student may need and help to make special arrangements for that support;
- (x) Provide placement assistance

Assessment and evaluation of Vocational Teachers/Trainers is very critical for making them aware of their performance and for suggesting corrective actions. The States/UTs should ensure that the performance of the Vocational Teachers/Trainers is appraised annually. Performance based appraisal in relation to certain pre-established criteria and objectives should be done periodically to ensure the quality of the Vocational Teachers/Trainers. Following parameters may be considered during the appraisal process:

1. Participation in guidance and counselling activities conducted at Institutional, District and State level;
2. Adoption of innovative teaching and training methods;
3. Improvement in result of vocational students of Class X or Class XII;
4. Continuous upgradation of knowledge and skills related to the vocational pedagogy, communication skills and vocational subject;
5. Membership of professional society at District, State, Regional, National and International level;
6. Development of teaching-learning materials in the subject area;
7. Efforts made in developing linkages with the Industry/Establishments;
8. Efforts made towards involving the local community in Vocational Education
9. Publication of papers in National and International Journals;
10. Organisation of activities for promotion of vocational subjects;
11. Involvement in placement of students/student support services.

## 9. LIST OF CONTRIBUTORS

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