

LEARNING OUTCOME BASED VOCATIONAL CURRICULUM

JOB ROLE: QUALITY SEED GROWER

(QUALIFICATION PACK: REF. ID. AGR/Q7101)

SECTOR: AGRICULTURE

Grades 11 and 12





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. K. Gandhi



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PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

Shyamla Hills, Bhopal- 462 002, M.P., India

**LEARNING OUTCOME BASED
VOCATIONAL CURRICULUM**

**Agriculture- Quality Seed
Grower**

October, 2025

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Published by:

Joint Director

PSS Central Institute of Vocational
Education, NCERT, Shyamla Hills,
Bhopal



PATRONS

Dr. Deepak Paliwal

Joint Director

PSS Central Institute of Vocational Education

Bhopal

COURSE COORDINATOR

Dr. Anoop Kumar Rathore

Assistant Professor

Dept. of Agriculture & Animal Husbandry

PSS Central Institute of Vocational Education

Bhopal

FOREWORD

The 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 education to open pathways of career progression for students. The curriculum has been developed for the vocational education programme introduced under the Centrally Sponsored Scheme of Samagra Shiksha of the Ministry of Education (erstwhile, Ministry of Human Resource Development) and is aligned to the National Skill Qualifications Framework (NSQF). The curricula for vocational courses are being developed under the project approved by the Project Approval Board (PAB) of ‘Samagra Shiksha’, which is an overarching programme for the school education sector extending from pre-school to Grade 12.

It is a matter of great pleasure to introduce this learning outcome-based curriculum as part of the vocational training package for the job role of Quality Seed Grower. The curriculum has been developed for the secondary students of Grades 11 and 12 and is aligned to the National Occupation Standards (NOSs) for the job role. The curriculum aims to provide students 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 skill needs. The teaching-learning is to be done through interactive sessions in classrooms, practical activities in laboratories or workshops, projects, field visits, etc. and professional experience is to be provided through on-the-job training.

The curriculum has been developed and reviewed by a group of experts and their contributions are duly 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

DINESH PRASAD SAKLANI

Director

National Council of Education Research and Training

PREFACE

India today stands poised at a very exciting juncture in its saga. The potential for achieving inclusive growth is 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. In order to fulfil the growing aspirations of our youth and the demand for a skilled human resource, the Ministry of Education (erstwhile, Ministry of Human Resource Development (MHRD), Government of India introduced the revised Centrally Sponsored Scheme of Vocationalisation of School 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 PSS Central Institute of Vocational Education (PSSCIVE) was entrusted with the responsibility to develop learning outcome-based curricula, student textbooks and e-learning material for job roles in various sectors.

The PSSCIVE firmly believes that the vocationalisation of education in the nation needs 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 society and the world of work. In order to honour its commitment to the nation, the PSSCIVE is developing learning outcome- based curricula with the involvement of faculty members and leading experts in the field. It is being done through the concerted efforts of leading academicians, professionals, policymakers, partner institutions, Vocational Education and Training (VET) 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. 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.

The success of this curriculum depends upon its effective implementation, and it is expected that the managers of vocational education programme, vocational educators, vocational teachers/trainers, and other stakeholders will make earnest efforts to provide better facilities, develop linkages with the industry or world of work and foster a conducive learning environment for the students for effectively transacting the curriculum and to achieve the learning outcomes as per the content of the curriculum document.

DEEPAK PALIWAL

Joint Director

PSS Central Institute of Vocational Education

ACKNOWLEDGEMENTS

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 Samagra Shiksha and the officials of the Ministry of Education (MoE), 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 Samagra Shiksha, MoE, SS Cell at the National Council of Educational Research and Training (NCERT), National Skill Development Agency (NSDA), 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. Their names are acknowledged in the list of contributors and reviewers.

We are also grateful to Dr. Anoop Kumar Rathore, Course Coordinator, Department of Agriculture and Animal Husbandry, PSSCIVE, Bhopal for his contributions.

The contributions made by Dr. Vinay Swarup Mehrotra, Professor, Curriculum Development and Evaluation Centre (CDEC), Dr. Vipin Kumar Jain, Associate Professor, Department of Humanities, Science, Education and Research and Dr. Dipak D. Shudhalwar, Professor, Department of Engineering and Technology, PSSCIVE in development of the curriculum for the employability skills are duly acknowledged.

The suggestions and editorial support provided by Dr. R. K. Pathak, Professor and Mr. Aman Kumar, Assistant Professors, Department of Agriculture and Animal Husbandry, PSSCIVE are duly appreciated and acknowledged.

PSSCIVE Team

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1- COURSE OVERVIEW

Course Title: Quality Seed Grower

A **Quality Seed Grower** plays a crucial role in producing high-quality seeds through systematic crop production practices. The grower is responsible for selecting suitable fields, preparing the land, and ensuring proper sowing of seeds of approved varieties. Throughout the crop growth period, the seed grower follows recommended agronomic practices such as maintaining isolation distance, timely irrigation, weed and pest management, and rouging off-type plants to maintain genetic purity. After maturity, the grower ensures careful harvesting, threshing, drying, and cleaning of seeds to preserve their physical and physiological quality. By adhering to quality standards and maintaining accurate field records, the Quality Seed Grower contributes to the availability of superior seeds that enhance crop productivity and sustainability.

Course Outcomes: On completion of the course, students should be able to:

- Apply effective oral and written communication skills to interact with people and 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 & 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
- Explain significance of seed industry
- Explain importance of seed and employment opportunities for quality seed growers
- Demonstrate field preparation and identify the tools, equipment and implements used in seed production
- Demonstrate sowing of seed
- Demonstrate water and nutrient management practices in seed crops
- Demonstrate management of genetic purity and weed in seed crops
- Demonstrate Insect pest and disease management
- Describe certification at field level
- Demonstrate harvesting of seed crop and post-harvest management
- Demonstrate processing of seed
- Demonstrate certification at seed level

- Demonstrate packaging, storage, and transportation of seeds
- Explain registration process as seed grower
- Describe marketing of seeds and evaluate the economics of seed production
- Describe overview importance and scope of Seed production
- Describe the process of preparing for growing seed crops.
- Demonstrate the process of sowing the seeds and maintaining the seed crops.
- Demonstrate the process of performing harvesting and post-harvest processing of the seed crop.
- Explain the basic entrepreneurial activities for small enterprise.
- Describe the process of undertaking employability and entrepreneurial practices.
- Explain the importance of practicing inclusion and gender equality at work.
- Demonstrate various practices to maintain personal hygiene, cleanliness, and safety at the work.

Course Requirements: The learner should have the basic knowledge of science.

Course Level: On completion of this course, a student can take up a higher-level course for a job role in quality Seed Grower.

Course Duration:		600 Hrs
Class 11	:	300 Hrs
Class 12	:	300 Hrs
Total	:	600 Hrs

2- SCHEME OF UNITS AND ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Grades 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 Grade 11 is as follows:

GRADE 11			
	Units	No. of Hours for Theory and Practical 300	Max. Marks for Theory and Practical 100
Part A	Employability Skills		
	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	
	Total	110	10
Part B	Vocational Skills		
	Unit 1: Overview & Importance of Quality Seed Production	45	40
	Unit 2: Pre-Production Planning for seed production	55	
	Unit 3: Sowing & Maintenance of Seed Crops	65	
	Total	165	40
Part C	Practical Work		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	Total	10	35
Part D	Project Work/Field Visit		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
	Total	15	15
	Grand Total	300	100

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

GRADE 12			
	Units	No. of Hours for Theory and Practical 300	Max. Marks for Theory and Practical 100
Part A	Employability Skills		
	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	
	Total	110	10
Part B	Vocational Skills		
	Unit 1: Harvesting, Processing & Certification	55	40
	Unit 2: Entrepreneurship, Marketing & Economics	60	
	Unit 3: Maintain Health and Safety measures at the Workplace	50	
	Total	165	40
Part C	Practical Work		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	Total	10	35
Part D	Project Work/Field Visit		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
	Total	15	15
	Grand Total	300	100

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- ASSESMENT AND CERTIFICATION

Upon 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 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
	Total	5x1=5	10x2=20	5x3=15	40 (20 questions)

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 organized 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.

UNIT CONTENTS
GRADE 11
Part A: Employability Skills

Sr.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
	Total	110

UNIT 1: COMMUNICATION SKILLS – III		
Duration: 25 Hrs		
Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)
1. Demonstrate Knowledge of Effective Communication	• Introduction to communication • Importance of communication • Elements of communication • Perspectives in communication • Effective communication	• Role-play on the communication process • Group discussion on factors affecting perspectives in communication • Classroom discussion on the 7Cs of effective communication (i.e. Clear, Concise, Concrete, Correct, Coherent, Courteous and Complete) • Chart making on elements of communication
2. Demonstrate Verbal Communication	• Verbal communication • Public speaking	• Role-play of a phone conversation. • Group exercise on delivering speech and practicing public speaking

3. Demonstrate Non-Verbal Communication	• Importance of non-verbal communication • Types of non-verbal communication • Visual communication	• Role-play on non-verbal communication • Group exercise and discussion on Do's and Don'ts to avoid body language mistakes • Group activity on methods of communication
4. Use Correct Pronunciation	• Pronunciation basics • Speaking properly • Phonetics • Types of sounds	• Group exercises on pronouncing words
5. Demonstrate the knowledge of Assertive Communication Style	• Important communication styles • Assertive communication • Advantages of assertive communication • Practicing assertive communication	• Group discussion on communication styles • Group discussion on observing and sharing communication styles
6. Demonstrate the Knowledge of Saying No	• Steps for saying 'No' • Connecting words (Conjunctions)	• Group discussion on how to respond • Group activity on saying 'No'
7. Identify and Use Parts of Speech in Writing	• Capitalization • Punctuation • Basic parts of speech • Supporting parts of speech	• Group exercises on identifying parts of speech • Group exercises on constructing sentences • Group exercises on nouns
8. Write Sentences and Paragraphs	• Parts of a sentence • Types of objects • Types of sentences • Paragraph	• Exercises on making sentences • Activity on active and passive voice • Assignment on writing different types of sentences
9. Communicate with People	• Greetings • Introducing self and others	• Role-play on formal and informal greetings • Role-play on introducing someone • Practice session and group discussion on greeting different people.

10. Introduce Self to Others and Write About Oneself	- Talking about self - Filling out a form to write about self	- Practicing self-introduction to write about self - Filling up forms to write about self
11. Ask Questions	- Types of questions - Asking close-ended and open-ended questions	- Exercise on asking different types of questions - Group activity on framing open and close-ended questions
12. Communicate Information About Family to Others	Words that show relations in the family	- Practice talking about family - Role-play on talking about family members
13. Describe Habits and Routines	Concept of habits and routines	- Group discussion on habits and routines - Group activity on describing routines
14. Ask or Give Directions to Others	- Asking for directions to a place - Giving directions for a place	- Role-play on asking and giving directions to a place - Identifying symbols used for giving directions

UNIT 2: SELF-MANAGEMENT SKILLS – III		
Duration: 25 Hrs		
	Theory (10 Hrs)	Practical (15 Hrs)
1. Identify and Analyse Own Strengths and Weaknesses	- Knowing yourself - Identifying strengths and weaknesses - Difference between interests and abilities	- Activity on writing aim in life - Preparing a worksheet on interests and abilities
2. Demonstrate Personal Grooming	Guidelines for dressing and grooming	- Role-play on dressing and grooming standards - Self-reflection activity on dressing and grooming
3. Maintain Personal Hygiene	- Importance of personal hygiene - Three steps to personal hygiene	- Role-play on personal hygiene - Assignment on personal hygiene

	• Essential steps of hand washing	
4. Demonstrate the Knowledge of Working in a Team and Participating in Group Activities	• Describe the benefits of teamwork • Working in a team	• Assignment on working in a team • Self-reflection on teamwork
5. Describe the Importance of Networking Skills	• Benefits of networking skills • Steps to build networking skills	• Group exercise on networking in action • Assignment on networking skills
6. Describe the Meaning and Importance of Self-Motivation	• Self-motivation • Types of motivation • Qualities of Self-motivated people	• Activity on staying motivated • Assignment on reasons hindering motivation
7. Set SMART Goals	• Meaning of goals and purpose of goal-setting • Setting SMART (Specific, Measurable, Attainable, Realistic and Timebound) goals	• Assignment on setting SMART goals • Activity in developing long-term and short-term goals using the SMART method
8. Apply Time Management Strategies and Techniques	• Time management • Steps for effective time management	• Preparing a checklist of daily activities • Preparing to-do-list

UNIT 3: INFORMATION AND COMMUNICATION TECHNOLOGY SKILLS – III		
Duration: 20 hours		
	Theory (08 Hrs)	Practical (12 Hrs)
1. Create A Document on the Word Processor	• Introduction to ICT • Advantages of using (Information and Communication Technology) a word processor. • Working with Libre Office Writer	• Group activity on demonstration and practice of the following: i. Creating a new document ii. Typing text iii. Saving the text iv. Opening and saving files on Microsoft Word/Libre Office Writer.
2. Identify the basic interface of LibreOffice	• Standard user interface of LibreOffice writer i. Status bar	• Group activity on using the basic user interface of LibreOffice writer

	ii. Menu bar iii. Tool bar iv. Making a text bold	Group activity on working with Microsoft Word
3. Save, Close, Open and Print Document	- Saving a Word document - Closing a Word document - Opening an existing document - Printing a Word document	- Group activity on performing the functions for saving, closing, and printing documents in LibreOffice Writer - Group activity on performing the functions for saving, closing, and printing documents in Microsoft Word
4. Format Text in a Word Document	- Changing style and size of text - Aligning text and - Cutting, Copying, Pasting text - Finding and replacing	- Group activity on formatting text in LibreOffice Writer - Group activity on formatting text in Microsoft Word
5. Check Spelling and Grammar in a Word Document	- Starting a spell checker - Short-cut menu for spell checker - Autocorrecting spellings	- Group activity on checking spellings and grammar using LibreOffice Writer - Group activity on checking spelling and grammar using Microsoft Word
6. Insert Lists, Tables, Pictures, and Shapes in a Word Document	- Insert bullet list - Inserting the following in Word document - Number list - Tables - Pictures - Shapes	Practical exercise of inserting lists and tables using LibreOffice Writer
7. Insert Header, Footer and Page Number in a Word Document	- Inserting the following in a Word document - Header - Footer - page number - Page count	Practical exercises of inserting header, footer and page numbers in LibreOffice Writer and Microsoft Word
8. Demonstrate the Use of Track Change Option in a Word Document	- Tracking changes in LibreOffice Writer - Manage option - Comparing documents	Group activity on performing changes in track mode in LibreOffice

		Writer and Microsoft Word
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UNIT 4: ENTREPRENEURSHIP SKILLS – III		
Duration: 25 Hrs		
	Theory (10 Hrs)	Practical (15 Hrs)
1. Differentiate Between Different Kinds of Businesses	• Introduction to entrepreneurship • Types of business activities – manufacturing, trading, and service	• Role-play on different kinds of businesses around us
2. Describe the Significance of Entrepreneurial Values	• Values of an entrepreneur • Case study on qualities of an entrepreneur	• Role-play on qualities of an entrepreneur
3. Describe the Attitudinal Changes Required to Become an Entrepreneur	• Difference between the attitude of an entrepreneur and an employee	• Interviewing employees and entrepreneurs
4. Describe the Importance of Thinking Like an Entrepreneur	• Problems of entrepreneurs • Problem-solving • Thinking like an entrepreneur to solve problems	• Group activity on identifying and solving problems
5. Generate Business Ideas	• The business cycle • Principles of idea creation • Generating a business idea • Case studies	• Group activity to create business ideas
6. Describe Customer Needs and the Importance of Conducting a Customer Survey	• Understanding customer needs • Conducting a customer survey	• Group activity for conducting a customer survey
7. Create a Business Plan	• Importance of business planning • Preparing a business plan • Principles to follow for growing a business • Case studies	• Group activity on developing a business plan

UNIT 5: GREEN SKILLS – III		
Duration: 15 Hrs		
	Theory (07 Hrs)	Practical (08 Hrs)
1. Describe the Importance of the Main Sectors of the Green Economy	- Important sectors of green economy- - Agriculture - Energy resources - Construction - Fisheries - Forestry - Tourism - Transport - Water Management - Waste management - Manufacturing - Industry	- Group discussion on sectors of the green economy - Preparing posters on various sectors for promoting the green economy
2. Describe Policies for the Green Economy	Policies for a green economy	- Group discussion on initiatives for promoting the green economy - Writing an essay or a short note on the important initiatives for promoting a green economy.
3. Describe the Role of Various Stakeholders in the Green Economy	Stakeholders in the green economy	- Group discussion on the role of stakeholders in the green economy - Making solar bulbs.
4. Describe the Role of Government and Private Agencies in the Green Economy	- Role of the government in promoting a green economy - Role of private agencies in promoting green economy	- Group discussion on the role of government and private agencies in promoting a green economy. - Preparing posters on green sectors.

GRADE 11

Part B: Vocational Skills

S. No.	Units	Duration Hrs)
1.	Unit 1: Overview & Importance of Quality Seed Production	45
2.	Unit 2: Planning for Seed Production	55
3	Unit 3: Management of Seed Crops and Certification at Field Level	65
Total		165

Unit 1: Overview & Importance of Quality Seed Production			
Learning Outcome	Theory (20 Hrs)	Practical (25 Hrs)	Duration (45 Hrs)
1. Explain significance of seed industry	1. Overview of agriculture industry 2. Current status of seed industry - Public sector - Private sector	1. Visit to nearby seed industries to know the significance	20 Hrs
2. Explain importance of seed and employment opportunities for quality seed growers	1. Seed and its importance - Define seed - Seed vs grain - Importance of seed - Importance of variety 2. Quality seed and its factors 3. Role and responsibilities of a quality seed grower 4. Employment opportunities of quality seed growers	1. Demonstrate different types viz., cotyledon, endosperm, germination, dormancy of seeds of field crops 2. Demonstrate and analyse seed quality parameters	25 Hrs
Total			

Unit 2: Planning for Seed Production			
Learning Outcome	Theory (20 Hrs)	Practical (35 Hrs)	Duration (55 Hrs)
1. Identify suitable field and seed sources, and demonstrate proper procurement, and storage practices	1. Criteria for selection of field for seed production 2. Soil sampling for testing 3. Classes of seed and its identification 4. Source of seed for sowing and keeping records for certification 5. Precautions for storage of procured seed	1. Demonstrate preparation of soil sample 2. Identification of classes/source of seed 3. Demonstrate precautions for storage of seed	20 Hrs
2. Demonstrate field preparation and identify the tools, equipment and implements used in seed production	1. Field preparation for seed production 2. Tools, equipment, implements and PPE use in field preparation 3. Input requires for seed production 4. Requirement of isolation to avoid contamination	1. Demonstrate field preparation for seed production 2. Identification of tools, implements and equipment 3. Demonstrate methods to keep the seed crops under isolation	20 Hrs
3. Demonstrate sowing of seed	1. Methods of sowing 2. Seed treatment	1. Demonstrate seed treatment and seed sowing	15 Hrs

	3. Time of sowing, seed rate, spacing and sowing depth		
Total			55 Hrs

Unit 3: Management of Seed Crops and Certification at Field Level			
Learning Outcome	Theory (25 Hrs)	Practical (40 Hrs)	Duration (65 Hrs)
1. Demonstrate water and nutrient management practices in seed crops	1. Water management in seed crop 2. Nutrient management in seed crop	1. Demonstrate fertilizer application 2. Identification of different manure and fertilizers 3. Demonstrate calculation of fertilizer requirement based on the recommended dose of NPK	15 Hrs
2. Demonstrate management of genetic purity and weed in seed crops	1. Identification of off type and its rouging procedure 2. Weed management in seed crop 3. Objectionable weeds at field level	1. Demonstrate rouging 2. Identification of objectionable weeds of different crops at field level 3. Demonstrate calculation to determine the require quantity of herbicide	15 Hrs
3. Demonstrate Insect pest and disease management	1. Insect pest management of seed crop 2. Disease management of seed crop 3. Objectionable seed borne diseases at field level	1. Identification of economically important insect-pest 2. Identification of objectionable seed borne diseases at field level	20 Hrs
4. Demonstrate certification at field level	1. Define seed certification at field level 2. Procedure of field inspection 3. Factors to be observe during field inspection 4. Seed certification standard of important crop at field level	1. Demonstrate stages, number and factors to be observed during field inspections	15 Hrs
Total			65 Hrs

GRADE 12

Part A: Employability Skills

Sr. 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
	Total	110

UNIT 1: COMMUNICATION SKILLS – IV		
Duration: 25 Hrs		
Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)
1. Demonstrate Active Listening Skills	- Active listening -listening skill and stages of active listening - Overcoming barriers to active listening	- Group discussion on factors affecting active listening - Preparing posters of steps for active listening - Role-play on negative effects of not listening actively
2. Identify the Parts of Speech	- Parts of speech – using capitals, punctuation, and basic parts of speech - Supporting parts of speech	- Group practice on identifying parts of speech - Group practice on constructing sentences
3. Write Sentences	- Writing simple sentence - Writing complex sentences - Types of object - Types of sentences - Active and Passive sentences - Statement/ - Declarative sentence - Question/ - Interrogative sentence - Emotion/ - Reaction or Exclamatory sentence - Order or Imperative sentence - Paragraph writing	- Group work on writing sentences and paragraphs - Group work on practicing writing sentences in active or passive voice - Group work on writing different types of sentences (i.e., declarative, exclamatory, interrogative and imperative)

UNIT 2: SELF-MANAGEMENT SKILLS – IV

Duration: 25 Hrs		
Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)
1. Describe the Various Factors Influencing Motivation and Positive Attitude	• Motivation and positive attitude • Intrinsic and extrinsic motivation • Positive attitude – ways to maintain positive attitude • Stress and stress management - ways to manage stress	• Role-play on avoiding stressful situations • Activity on listing negative situations and ways to turn them to positive
2. Demonstrate the Knowledge of becoming Oriented	• Becoming result-oriented • Goal setting – examples of result-oriented goals	• Group activity on listing aim in life
3. Describe the Importance of Self-Awareness and the Basic Personality Traits, Types and Disorders	• Steps towards self-awareness • Personality and basic personality traits • Common personality disorders- i. Suspicious ii. Emotional and impulsive iii. Anxious • Steps to overcome personality disorders	• Group discussion on self-awareness

UNIT 3: INFORMATION AND COMMUNICATION TECHNOLOGY SKILLS – IV		
Duration: 25 Hrs		
	Theory (06 Hrs)	Practical (14 Hrs)
1. Identify the Components of a Spreadsheet Application	• Getting started with a spreadsheet - types of a spreadsheet • Steps to start LibreOffice Calc., • Components of a worksheet.	• 1. Group activity on identifying components of spreadsheet in LibreOffice Calc.
2. Perform Basic Operations in a Spreadsheet	• Opening workbook and entering data – types of data, steps to enter data, editing and deleting data in a cell • Selecting multiple cells • Saving the spreadsheet in various formats • Closing the spreadsheet • Opening the spreadsheet. • Printing the spreadsheet.	• Group activity on working with data on LibreOffice Calc.
3. Demonstrate the Knowledge of Working with Data	• Using a spreadsheet for addition – adding value directly, adding by using cell address, using a mouse to select values in a formula, using sum	• Group activity on formatting a spreadsheet in LibreOffice Calc

and Formatting Text	function, copying and moving formula • Formatting cell and content • Changing text style and font size • Aligning text in a cell • Highlighting text	• Group activity on performing basic calculations in LibreOffice Calc.
4. Demonstrate the Knowledge of Using Advanced Features in Spreadsheet	• Advanced features in Spreadsheet i. Sorting data ii. Filtering data iii. Protecting spreadsheet with password	• Group activity on sorting data in LibreOffice Calc
5. Make Use of Software for Making Slides Presentations	• Steps to start LibreOffice Impress • Adding text to a slide presentation	• Group practice on working with LibreOffice Impress tools
6. Demonstrate the Knowledge of Opening, Closing and Slide Presentations	• Printing a presentation	• Group activity on closing and saving a presentation in LibreOffice Impress
7. Demonstrate the Knowledge of working with Slides	• Working with slides and text in a presentation- adding slides to a presentation, deleting slides, adding and formatting text, highlighting text, aligning text and changing text color	• Group practice on working with font styles in LibreOffice Impress
8. Demonstrate the Use of Advanced Features in a Presentation	• Advanced features used in a presentation • Inserting shapes in the presentation • Inserting clipart and images in a presentation • Changing slide layout	• Group activity on changing slide layout on LibreOffice Impress

UNIT 4: ENTREPRENEURSHIP SKILLS – IV		
Duration: 25 Hrs		
Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)
1. Describe the Types and Qualities of Entrepreneurs	• Entrepreneurship and entrepreneur • Characteristics of entrepreneurship • Entrepreneurship-art and science	• Group discussion on the topic “An entrepreneur is not born but created”. • Conducting a classroom quiz on

	- Qualities of a successful entrepreneur - Types of entrepreneurs - Roles and functions of an entrepreneur - What motivates an entrepreneur? - Identifying opportunities and risk-taking - Startups	various aspects of entrepreneurship.
2. Identify the Barriers to Entrepreneurship	- Barriers to entrepreneurship - Environmental barriers - Faulty business plan - Personal barriers	- Group discussion about “What we fear about entrepreneurship” - Activity on taking an interview of an entrepreneur.
3. Identify the Attitude that Makes an Entrepreneur Successful	Entrepreneurial attitude	-----
4. Demonstrate the Knowledge of Entrepreneurial Attitude and Competencies	- Entrepreneurial competencies - Decisiveness - Initiative - Interpersonal skills-positive attitude, stress management - Perseverance - Organizational skills- time management, goal setting, efficiency, managing quality	- Playing games, such as “Who am I”. - Group discussion on business ideas - Group practice on “Best out of Waste” - Group discussion on the topic of “Let’s grow together” - Group activity on time management - Activity on “My entrepreneurial attitude”

UNIT 5: GREEN SKILLS – IV		
Duration: 25 Hrs		
Learning Outcome	Theory (05 Hrs)	Practical (10 Hrs)
1. Identify the Benefits of the Green Jobs	- Green jobs - Benefits of green jobs - Green jobs in different sectors: - Agriculture	Group discussion on the importance of green jobs.

	ii. Transportation iii. Water conservation iv. Solar and wind energy v. Eco-tourism vi. Building and construction vii. Solid waste management viii. Appropriate technology	
2. State the Importance of Green Jobs	- Importance of green jobs in the following i. Limiting greenhouse gas emissions ii. Minimizing waste and pollution iii. Protecting and restoring ecosystems iv. Adapting to the effects of climate change	- Preparing posters on green jobs. - Group activity on tree plantation.

GRADE 12

Part B–Vocational Skills

S. No.	Units	Duration (Hrs)
1.	Unit 1: Harvesting, Processing & Certification at Seed Level	60
2.	Unit 2: Marketing & Economics of Seed	55
3	Unit 3: Maintain Health and Safety Measures at the Workplace	50
Total		165

Unit 1: Harvesting, Processing & Certification at Seed Level			
Learning Outcome	Theory (20 Hrs)	Practical (40 Hrs)	Duration (60 Hrs)
1. Demonstrate harvesting of seed crop and post-harvest management	1. Harvestable maturity of seed crops 2. Harvesting methods of seed crop 3. Threshing, cleaning, and drying of seed 4. Precaution during harvesting, threshing, cleaning, and drying of seed	1. Determination of seed crop maturity of different crops for harvesting 2. Demonstrate precautions to be taken during harvesting, threshing,	20 Hrs

		cleaning, and drying	
2. Demonstrate processing of seed	1. Define seed lot 2. Pre conditioning 3. Basic cleaning 4. Grading	1. Visit nearby seed processing plant to observe seed processing and packaging	15 Hrs
3. Demonstrate certification at seed level	1. Preparation of sample for seed testing 2. Physical purity 3. Germination 4. Moisture content 5. Genetic purity at seed level 6. Identification of objectionable diseases and weeds at seed level 7. Certification standards of important crops at seed level	1. Preparation of seed sample 1. Demonstrate determination of physical purity, germination and moisture content of a seed lot 2. Identification of genetic purity (ODV-Other Distinguishable Variety), objectionable diseases and weeds	15 Hrs
3. Demonstrate packaging, storage, and transportation of seeds	1. Packaging and labelling of seed 2. Storage of packaged seeds 3. Factors to be observed during storage 4. Transportation of seeds	1. Demonstrate packaging and factors to be observed during storage 2. Demonstrate mid-storage correction	10 Hrs
Total			60 Hrs

Unit 2: Marketing & Economics of seed			
Learning Outcome	Theory (20 Hrs)	Practical (35 Hrs)	Duration (55 Hrs)
1. Registration as seed grower	1. Registration for seed production at • Seed Corporation (State and National) • MoU with private seed industries • As member of FPOs • As member of seed society	1. Visit to NSC/SSC/Co-operative society/FPOs/Seed companies to observe procedure of registration	20 Hrs
2. Demonstrate marketing of	1. Establishment of seed producing companies	1. Visit to local seed suppliers/shop to	20 Hrs

seeds and evaluate the economics of seed production	• Demand and supply analysis • Identification of target customers • Preparation of business plan • Explore sources of funding • Price information and market analysis • Registration of seed companies	collect information on business plan and market analysis	
3. Explain economics of seed production, govt. schemes and seed regulations	1. Economics of seed production 2. Government schemes on seed production 3. Seed Acts and its Regulation	1. Calculate cost of cultivation	15 Hrs
Total			55 Hrs

Unit 3: Maintain Health and Safety measures at the Workplace			
Learning Outcome	Theory (20 Hrs)	Practical (30 Hrs)	Duration (50 Hrs)
1. Prevent hazardous conditions at workplace	1. Describe the Hazard 2. Types of Hazards 3. Toxicity label of chemical 4. Explain the risk	1. Prepare a flow chart on types of hazards at a workplace	25 Hrs
2. First aid, treatment and safety equipment	1. First aid, treatment and safety equipment 2. Chemical poisoning and first aid measures 3. General health and safety measures 4. Amenities and environment 5. Emergency response 6. Chemicals and hazardous substances 7. Precautions to be taken in a farm	1. Demonstration of safety devices and measures to be followed	25 Hrs
Total			50 Hrs

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 Seed Production Farm and observe the following: Location, Site, Office building, Store, Packing Yard, Seed bed, Water tank/Tube well. During the visit, students should obtain the following information from the owner or the supervisor of the Seed Production Farm:

1. Area under Cultivation and its layout
2. Types of Seed Crop
3. Name of varieties grown
4. Total production of grown annually
5. Registration procedure
6. Marketing procedure
7. Manpower engaged
8. Total expenditure of growing seed crop
9. Total annual income
10. Profit/Loss (Annual)
11. 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. Auger
2. Disc Harrow
3. Farmyard Manure
4. Fertilisers
5. Digging Spade
6. Hoe
7. Knapsack Sprayer
8. Levelers
9. Long Handle Hoes
10. Plastics Baskets
11. Plough
12. Pump sets
13. Rigid Tillers

14. Rotary Tiller
15. Seed Treating Equipment
16. Seed-cum-Fertilizer Drill
17. Straw Reaper
18. Tractor
19. Trowels
20. Measuring cylinder, pesticides.
21. Pheromone traps
22. Power sprayer
23. Weighing machine
24. Moisture meter
25. Small-scale seed threshers
26. Hand sieves
27. Seed cleaning machines
28. Seed graders / seed separators
29. Winnowing fans
30. Seed germination chamber / incubator
31. Tetrazolium testing kit
32. Seed moisture tester
33. Seed counters
34. Seed drying trays / racks
35. Solar dryers
36. Moisture-proof storage containers
37. Packaging bag for storage

8- Vocational Teachers/ Trainers 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:

Sr. No.	Qualification	Minimum Competencies	Age Limit
1.	Bachelor's degree (B.Sc.) in Agriculture with two-year experience or Master's degree (M.Sc.) in Agriculture or B. Voc/ in Agriculture with three-year experience.	• Effective communication skills (oral and written) • Basic computing skills.	• 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 Samagra Shiksha. 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. Organization of activities for promotion of vocational subjects;
11. Involvement in placement of students /student support services.

9- LIST OF REFERENCE BOOK

- Seed Technology by Dhirendra Khare and M.S. Bhale, Scientific Publishers (India).
- Principles of Seed Technology by P.K. Agarwal, ICAR, New Delhi.
- Fundamentals of Seed Technology by Phundon Singh, Kalyani Publishers, New Delhi.
- Seed Technology by R.L. Agarwal, Oxford and IBH Publishing Co., New Delhi.

10- LIST OF CONTRIBUTORS

Sr. No Name and address of expert

1. Dr. Dhirendra Khare, Dean Faculty of Agriculture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh
2. Dr. Uttam Kumar Bisen, Assistant Professor, College of Agriculture, Waraseoni, Balaghat, Jawaharlal Nehru Krishi Vishwa Vidyalaya

3. Dr. Surendra Ghritlahre, Scientist, ICAR-IIPR Regional Station, Phanda, Bhopal, Madhya Pradesh
4. Dr. Anoop Kumar Rathore, Assistant Professor, Department of Agriculture and Animal Husbandry, PSSCIVE, Shyamla Hills, Bhopal, Madhya Pradesh
5. Dr. Rajiv Kumar Pathak, Professor, Department of Agriculture and Animal Husbandry, PSSCIVE, Shyamla Hills, Bhopal, Madhya Pradesh
6. Mr. Aman Kumar, Assistant Professor, Department of Agriculture and Animal Husbandry, PSSCIVE, Shyamla Hills, Bhopal, Madhya Pradesh

विद्यया ऽ मृतमश्नुते



एन सी ई आर टी
NCERT

PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

Shyamla Hills, Bhopal, Madhya Pradesh