

LEARNING OUTCOME BASED VOCATIONAL CURRICULUM

JOB ROLE:

Field Technician – Other Home Appliances

(QUALIFICATION PACK: Ref. Id. ELE/Q3104)

Sector: Electronics

Classes 9 and 10



PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION
Shyamla Hills, Bhopal – 462 002, M.P., India

www.psscive.ac.in

LEARNING OUTCOME BASED VOCATIONAL CURRICULUM

JOB ROLE:

Field Technician – Other Home Appliances

(QUALIFICATION PACK: Ref. Id. ELE/Q3104)

SECTOR: Electronics

Classes 9 and 10



PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

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

www.psscive.ac.in

LEARNING OUTCOME BASED CURRICULUM
Field Technician – Other Home Appliances – Electronics Sector

September, 2018

© PSSCIVE, 2018

<http://www.psscive.ac.in>

No part of this work may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, microfilming, recording or otherwise, without written permission from the Publisher, with the exception of any material supplied specifically for the purpose of being used by the purchaser of the work.

The views and opinions expressed in this publication are those of the contributors/ authors and do not necessarily reflect the views and policies of PSS Central Institute of Vocational Education, Bhopal. The PSSCIVE does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use.

Published by:

Joint Director

PSS Central Institute of Vocational Education, NCERT, Shyamla Hills, 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 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 competency 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 **Electronics – Field Technician – Other Home Appliances**. The curriculum has been developed for the 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 Educational Research & Training

PREFACE

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 PSS 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 fulfill 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 21st Century.

RAJESH P. KHAMBAYAT

Joint Director

PSS Central Institute of Vocational Education

ACKNOWLEDGMENT

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 Electronics Sector Skill Council of Indian (ESSCI) for their academic support and cooperation.

We are grateful to Dipak D. Shudhalwar, Associate Professor (CSE), PSSCIVE, for his earnest effort and contributions in the development of this learning outcome based curriculum. The contributions are dully 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 (CSE) and Head, Department of Engineering and Technology, PSSCIVE in development of the curriculum for the employability skills are duly acknowledged.

We are also grateful to the Course Coordinator Dipak D. Shudhalwar, Associate Professor (CSE) and Head, Department of Engineering and Technology, PSSCIVE, for bringing out this curriculum in the final form.

CONTENTS

| Sn. | Title | Page No. |
|-----|--|----------|
| | Foreword | i |
| | Preface | ii |
| | Acknowledgment | iii |
| 1 | Course Overview | 1 |
| 2 | Scheme of Units | 2 |
| 3 | Teaching/ Training Activities | 4 |
| 4 | Assessment and Certification | 4 |
| 5 | Unit Content | 7 |
| | Class 9 | |
| | Part A Employability Skills | 7 |
| | Unit 1: Communication Skills – I | 7 |
| | Unit 2: Self-management Skills – I | 8 |
| | Unit 3: Basic ICT Skills – I | 8 |
| | Unit 4: Entrepreneurial Skills – I | 9 |
| | Unit 5: Green Skills – I | 10 |
| | Part B Vocational Skills | 11 |
| | Unit 1: Basics of Electrical and Electronics | 11 |
| | Unit 2: Electronic components | 11 |
| | Unit 3: Tools and equipment | 12 |
| | Unit 4: Installation of Water purifier | 12 |
| | Unit 5: Repair and Maintenance of Water purifier | 14 |
| | Unit 6: Maintain Health and Safety | 14 |
| | Class 10 | 13 |
| | Part A Employability Skills | 15 |
| | Unit 1: Communication Skills – II | 15 |
| | Unit 2: Self-management Skills – II | 16 |
| | Unit 3: Basic ICT Skills – II | 16 |
| | Unit 4: Entrepreneurial Skills – II | 17 |
| | Unit 5: Green Skills – II | 17 |
| | Part B Vocational Skills | 18 |
| | Unit 1: Basic Electricity and Electronics | 18 |
| | Unit 2: Repair and Maintenance of Mixer/ Juicer/ Grinder | 19 |
| | Unit 3: Repair and Maintenance of Microwave Oven | 19 |
| | Unit 4: Workplace Health and Safety Measures | 20 |
| 6 | Organization of Filed Visits | 20 |
| 7 | List of Equipment and Materials | 21 |
| 8 | Vocational Teacher's/ Trainer's Qualification and Guidelines | 21 |
| 9 | List of Contributors | 23 |

1. COURSE OVERVIEW

COURSE TITLE: Field Technician – Other Home Appliances

Other Home Appliances Field Technician: Also called, 'Home Appliance Repair Technician', Technician this is an after sales service job for installing and providing support to the water purifier, mixer/grinder buyers.

The individual at work installs the appliance and interacts with customers to diagnose the problem and possible causes. Once the problem and causes have been identified, the individual rectifies minor problems blems or replaces faulty modules for failed parts or recommends factory repairs for bigger faults.

The individual must be willing to work in the field and travel through the day from one customer's premise to another. Punctuality, amenable behaviour, patience, good interpersonal relationship building, trustworthiness, integrity, and critical thinking are important attributes for this job.

COURSE OUTCOME : 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 and abilities;
- ✓ Demonstrate the knowledge of the importance of green skills in meeting the challenges of sustainable development and environment protection;
- ✓ Engage with customer for service;
- ✓ Install the water purifier;
- ✓ Repair dysfunctional water purifier;
- ✓ Repair dysfunctional mixer/juicer/grinder;
- ✓ Repair dysfunctional microwave oven;
- ✓ Carry out splicing of cables.

COURSE REQUIREMENTS: The learner should have the basic reading and writing skills in English and Hindi.

COURSE LEVEL: This is a beginner level course meant for class 9 and 10.

COURSE DURATION: 400 Hours

Class 9 : 200 hrs

Class 10 : 200 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 Class 9 and 10 opting for vocational subject along with general education subjects. The unit-wise distribution of hours and marks for Class 9 is as follows:

| CLASS 9 | | | |
|---------------|--|--|--|
| | Units | No. of Hours for Theory and Practical 200 | Max. Marks for Theory and Practical 100 |
| Part A | Employability Skills | | |
| | Unit 1: Communication Skills | 20 | 10 |
| | Unit 2: Self-management Skills | 10 | |
| | Unit 3: Basic ICT Skills | 20 | |
| | Unit 4: Entrepreneurial Skills | 15 | |
| | Unit 5: Green Skills | 10 | |
| | Total | 75 | 10 |
| Part B | Vocational Skills | | |
| | Unit 1: Basics of Electrical and Electronics | 20 | 30 |
| | Unit 2: Electronic Components | 15 | |
| | Unit 3: Tools and Equipment | 10 | |
| | Unit 4: Installation of Water purifier | 20 | |
| | Unit 5: Repair and Maintenance of Water purifier | 20 | |
| | Unit 6: Maintain Health and Safety | 10 | |
| | Total | 95 | 30 |
| Part C | Practical Work | | |
| | Practical Examination | 6 | 15 |
| | Written Test | 1 | 10 |
| | Viva Voce | 3 | 10 |
| | Total | 10 | 35 |
| Part D | Project Work/Field Visit | | |
| | Practical File/ Student Portfolio | 10 | 10 |
| | Viva Voce | 5 | 5 |
| | Total | 15 | 15 |
| Part E | Continuous and Comprehensive Evaluation (CCE) | 05 | 10 |
| | Total | 200 | 100 |

The unit-wise distribution of hours and marks for **Class 10** is as follows:

| CLASS 10 | | | |
|-----------------|--|--|--|
| | Units | No. of Hours for Theory and Practical 200 | Max. Marks for Theory and Practical 100 |
| Part A | Employability Skills | | |
| | Communication Skills | 20 | 10 |
| | Self-management Skills | 10 | |
| | Basic ICT Skills | 20 | |
| | Entrepreneurial Skills | 15 | |
| | Green Skills | 10 | |
| | Total | 75 | 10 |
| Part B | Vocational Skills | | |
| | Unit 1: Electrical Components and Motor | 25 | 30 |
| | Unit 2: Repair and Maintenance of Mixer/ Juicer/ Grinder | 30 | |
| | Unit 3: Repair and Maintenance of Microwave Oven | 30 | |
| | Unit 4: Maintain Health and Safety | 10 | |
| | Total | 95 | 30 |
| Part C | Practical Work | | |
| | Practical Examination | 6 | 15 |
| | Written Test | 1 | 10 |
| | Viva Voce | 3 | 10 |
| | Total | 10 | 35 |
| Part D | Project Work/Field Visit | 10 Hours | |
| | Practical File/ Student Portfolio | 10 | 10 |
| | Viva Voce | 5 | 5 |
| | Total | 15 | 15 |
| Part E | Continuous and Comprehensive Evaluation (CCE) | 05 | 10 |
| | Total | 200 | 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. ASSESSMENT 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 competency.

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, and 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: 30

| Sn. | Typology of Question | Very Short Answer Q. (1 mark) | Short Answer Q (2 Marks) | Long Answer Questions (3 Marks) | Marks |
|-----|--|-------------------------------|--------------------------|---------------------------------|-------------------------|
| 1. | Remembering – (Knowledge based simple recall questions, to know specific facts, terms, concepts, principles, or theories; identify, define or recite, information) | 2 | 1 | 2 | 10 |
| 2. | Understanding – (Comprehension – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information) | 1 | 2 | 2 | 11 |
| 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 | 1 | 1 | 05 |
| 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 | 1 | 0 | 02 |
| 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 | 3x1=3 | 6x2=12 | 5x3=15 | 30 (14 Ques) |

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.

CONTINUOUS AND COMPREHENSIVE EVALUATION

Continuous and Comprehensive Evaluation (CCE) refers to a system of school-based evaluation of students that covers all aspects of student's development. In this scheme, the term 'continuous' is meant to emphasize that evaluation of identified aspects of students 'growth and development' is a continuous process rather than an event, built into the total teaching-learning process and spread over the entire span of academic session. The second term 'comprehensive' means that the scheme attempts to cover both the scholastic and the co-scholastic aspects of students' growth and development. For details, the CCE manual of Central Board of Secondary Education (CBSE) or the guidelines issued by the State Boards on the procedure for CCE should be followed by the Institutions.

5. UNIT CONTENTS

CLASS 9

Part A: Employability Skills

| S.No. | Units | Duration in Hours |
|-------|------------------------------------|-------------------|
| 1. | Unit 1: Communication Skills – I | 20 |
| 2. | Unit 2: Self-management Skills – I | 10 |
| 3. | Unit 3: Basic ICT Skills – I | 20 |
| 4. | Unit 4: Entrepreneurial Skills – I | 15 |
| 5. | Unit 5: Green Skills – I | 10 |
| | Total | 75 |

| Unit 1: Communication Skills – I | | | | |
|----------------------------------|--|--|---|-----------|
| Sn | Learning Outcome | Theory (08 Hours) | Practical (12 Hours) | 20 Hrs |
| 1. | Demonstrate knowledge of various methods of communication. | <ul style="list-style-type: none"> • Methods of communication. • Verbal. • Non-verbal. • Visual. | <ul style="list-style-type: none"> • Writing pros and cons of written, verbal and non-verbal communication. • Listing do's and don'ts for avoiding common body language mistakes. | 05 |
| 2. | Identify elements of communication cycle. | <ul style="list-style-type: none"> • Meaning of communication • Importance of communication skills • Elements of communication cycle– (i) sender, (ii) ideas, (iii) encoding, (iv) communication channel, (v) receiver, (vi) decoding, and (vii) feedback | <ul style="list-style-type: none"> • Draw a diagram of communication cycle • Role plays on communication process related to the sector/job role. | 05 |
| 3. | Identify the factors affecting our perspectives in communication | <ul style="list-style-type: none"> • Perspectives in communication. • Factors affecting perspectives in communication. • Visual perception. • Language. • Past experience. • Prejudices. • Feelings. • Environment. | <ul style="list-style-type: none"> • Group discussion on factors affecting perspectives in communication. • Sharing of experiences on factors affecting perspectives. • Sharing experiences on factors affecting communication at workplace. | 05 |

| | | | | |
|--------------------------------|---|---|--|-----------|
| 4. | Demonstrate the knowledge of basic writing skills | <ul style="list-style-type: none"> • Writing skills related to the following: • Phrases • Kinds of sentences • Parts of sentence • Parts of speech • Use of articles • Construction of a paragraph | <ul style="list-style-type: none"> • Demonstration and practice of writing sentences and paragraphs on topics related to the subject. | 05 |
| Total Duration in Hours | | | | 20 |

Unit 2: Self Management Skills – I

| Sn | Learning Outcome | Theory (07 Hours) | Practical (03 Hours) | 10 Hrs |
|--------------------------------|---|--|---|-----------|
| 1. | Describe the meaning and importance of self-management. | <ul style="list-style-type: none"> • Meaning of self-management. • Positive results of self-management. • Self-management skills. | <ul style="list-style-type: none"> • Identification of self-management skills • Strength and weakness analysis. | 05 |
| 2. | Identify the factors that helps in building self-confidence . | <ul style="list-style-type: none"> • Factors that help in building self-confidence – social, cultural, and physical factors • Self-confidence building tips - getting rid of the negative thoughts, thinking positively, staying happy with small things, staying clean, hygienic and smart, chatting with positive people, etc. | <ul style="list-style-type: none"> • Role play exercises on building self-confidence. • Use of positive metaphors/ words. • Positive stroking on wakeup and before going bed. • Helping others and working for community. | 05 |
| Total Duration in Hours | | | | 10 |

Unit 3: Basic ICT Skills – I

| Sn | Learning Outcome | Theory (10 Hours) | Practical (10 Hours) | 20 Hrs |
|----|--|--|--|-----------|
| 1. | Demonstrate the knowledge of the role of Information and Communication Technology (ICT) in day-to-day life and workplace | <ul style="list-style-type: none"> • Introduction to ICT • Role and importance of ICT in personal life and at workplace • ICT in our daily life (examples) • ICT tools – Mobile, tab, radio, TV, email, etc. | <ul style="list-style-type: none"> • Discussion on the role and importance of ICT in personal life and at workplace. • Preparing posters / collages for showing the role of ICT at workplace | 04 |
| 2. | Identify components of basic computer system and their functions | <ul style="list-style-type: none"> • Computer system – Central Processing Unit (CPU), memory, motherboard, storage devices • Hardware and software of a computer system • Role and functions of | <ul style="list-style-type: none"> • Connecting the cables and peripherals to the Central Processing Unit • Starting and shutting down a computer • Group discussion on the various aspects of hardware | 07 |

| | | | | |
|----|--|---|---|-----------|
| | | Random Access <ul style="list-style-type: none"> • Memory (RAM) and Read • Only Memory (ROM) • Role and functions of Central Processing Unit • Procedure for starting and shutting down a computer | and software | |
| 3. | Demonstrate use of various components and peripherals of computer system | <ul style="list-style-type: none"> • Peripherals devices and their uses – mouse, keyboard, scanner, webcam, etc. of a computer system | <ul style="list-style-type: none"> • Identification of various parts and peripherals of a computer • Demonstration and practice on the use of mouse • Demonstration and practice on the use of keyboard • Demonstration of the uses of printers, webcams, scanner and other peripheral devices • Drawing diagram of computer system and labelling it | 05 |
| 4. | Demonstrate basic computer skills | <ul style="list-style-type: none"> • Primary operations on a computer system – input, process, storage, output, communication networking, etc. | <ul style="list-style-type: none"> • Identification of the various input and output units and explanation of their purposes | 04 |
| | | | Total Duration in Hours | 20 |

| Unit 4: Entrepreneurial Skills – I | | | | |
|---|---|--|--|---------------|
| Sn | Learning Outcome | Theory (06 Hours) | Practical (09 Hours) | 15 Hrs |
| 1. | Identify various types of business activities | <ul style="list-style-type: none"> • Types of businesses – service, manufacturing, hybrid. • Types of businesses found in our community Business activities around us. | <ul style="list-style-type: none"> • Prepare posters of business activities found in cities/ villages, using pictures. • Discuss the various types of activities, generally adopted by small businesses in a local community. • Best out of waste. • Costing of the product made out of waste. • Selling of items made from waster materials. • Prepare list of businesses that provides goods and services in exchange for money. | 09 |
| 2. | Demonstrate the knowledge of distinguishing | <ul style="list-style-type: none"> • Meaning of entrepreneurship development. | <ul style="list-style-type: none"> • Prepare charts showing advantages of entrepreneurship over | 06 |

| | | | | |
|--|-------------------------------------|--|--|-----------|
| | characteristics of entrepreneurship | <ul style="list-style-type: none"> • Distinguishing characteristics of entrepreneurship. • Role and rewards of entrepreneurship. | <p>wages.</p> <ul style="list-style-type: none"> • Group discussions on role and features of entrepreneurship. • Lectures/presentations by entrepreneurs on their experiences and success stories. • Identify core skills of successful entrepreneur. | |
| | | | Total Duration in Hours | 15 |

| Unit 5: Green Skills – I | | | | |
|---------------------------------|---|--|---|-------------------|
| Sn | Learning Outcome | Theory (03 Hours) | Practical (07 Hours) | 10 Hrs |
| 1. | Demonstrate the knowledge of the factors influencing natural resource conservation. | <ul style="list-style-type: none"> • Introduction to environment. • Relationship between society and environment, ecosystem and factors causing imbalance. • Natural resource conservation. • Environment protection and conservation. | <ul style="list-style-type: none"> • Group discussion on hazards of deteriorating environment. • Prepare posters showing environment conservation. • Discussion on various factors that influence our environment. | 05 |
| 2. | Describe the importance of green economy and green skills. | <ul style="list-style-type: none"> • Definition of green economy • Importance of green economy | <ul style="list-style-type: none"> • Discussion on the benefits of green skills and importance of green economy. • Prepare a Poster showing the importance of green economy with the help of newspaper/ magazine cuttings. | 05 |
| | | | Total Duration in Hours | 10 |

Class IX, Part B: Vocational Skills

| Sn. | Units | Duration in Hours |
|------------|--|--------------------------|
| 1. | Unit 1: Basics of Electrical and Electronics | 20 |
| 2. | Unit 2: Electronic components | 15 |
| 3. | Unit 3: Tools and equipment | 10 |
| 4. | Unit 4: Installation of Water purifier | 20 |
| 5. | Unit 5: Repair and Maintenance of Water purifier | 20 |
| 6. | Unit 6: Maintain Health and Safety | 10 |
| | Total Duration | 95 |

| Unit 1: Basics of Electrical and Electronics | | | | |
|---|---|--|---|-------------------|
| Sn | Learning Outcome | Theory (08 Hours) | Practical (12 Hours) | 20 Hrs |
| 1. | Appreciate the basics of electrical and electronics | <ul style="list-style-type: none"> • Origin of electricity, • Electrical quantities, • AC and DC, • Electric circuit • Series and parallel connections, • Open circuit and closed circuit, • Ohms law, • Kirchhoff law, • Energy consumption of appliances. | <ul style="list-style-type: none"> • Demonstrate the basics of electricity and electrical, • Identify the symbols of voltage, current, resistance, power in a circuit diagram, • Draw the circuit and show voltage, current, resistance, power, • Identify the Live, Neutral and Earth on power socket, • Prepare the circuit to glow the lamp, • Construct a test lamp and use it to mains, • Build the series and parallel connections of resistors and calculate the resistance, • Verify ohm's law in the given electrical circuit. | 20 |
| | | | Total Duration in Hours | 20 |

| Unit 2: Electronic Components | | | | |
|--------------------------------------|---|---|---|-------------------|
| Sn | Learning Outcome | Theory (07 Hours) | Practical (08 Hours) | 15 Hrs |
| 1. | Identify the electronic components and measure its parameters | <ul style="list-style-type: none"> • Basic electronic components – resistor, capacitor, inductor, transformer, diode, transistor, LED, ICs • Resistor – definition, types, construction, specification, measuring parameter, • Capacitor – definition, types, construction, specification, measuring parameter, • Inductors – definition, types, construction, specification, measuring parameter, • Transformer – working principle, specifications • Diode – definition, types, construction, specification, measuring parameter, • Transistor – definition, types, construction, specification, measuring parameter, • LED – definition, | <ul style="list-style-type: none"> • Identify and name the discrete components used in circuit, • Read and list out the parameters of given resistor, capacitor, inductor, • Measure the resistor values using colour code and verify the reading by measuring in multi-meter • Identify different parts of transformers, • Identify NPN and PNP transistor • Setup an experiment to identify the primary and secondary winding of transformer and measure the voltage of primary and secondary winding of step down transformer. | 15 |

| | | | | |
|--|--|--|--------------------------------|-----------|
| | | construction, specific use, • IC – definition, construction, specific use. | | |
| | | | Total Duration in Hours | 15 |

| Unit 3: Tools and equipment | | | | |
|------------------------------------|--|--|--|-------------------|
| Sn | Learning Outcome | Theory (05Hours) | Practical (05 Hours) | 10 Hrs |
| 1. | Demonstrate the use of tools and equipment | <ul style="list-style-type: none"> • Hand tools – screwdriver, pliers, wire stripper, wire cutter, phase tester, Pipe wrench, wire lugs, drill machine and drill bits. • Multi-meter, • Clamp meter, • TDS meter, • Soldering iron and wire, • Soldering and de-soldering, | <ul style="list-style-type: none"> • Identify and name the hand tools and its parts, • Demonstrate to use the hand tools for given task, • Demonstrate the use of multi-meter to measure the various electrical quantity for the given task, • Demonstrate the soldering and desoldering techniques, • Identify P and N terminal of diode. • Identify the terminals of PNP and NPN transistor using multi-meter, • Measure the current flowing in the wire using clamp meter. | 10 |
| | | | Total Duration in Hours | 10 |

| Unit 4: Installation of Water purifier | | | | |
|---|------------------------------------|--|--|-------------------|
| Sn | Learning Outcome | Theory (08Hours) | Practical (12 Hours) | 20 Hrs |
| 1. | Undertake installation requirement | <ul style="list-style-type: none"> • Installation requirements (structural requirements, plumbing etc.), • Water flow diagram and electrical circuit diagram of the appliance, • Water purification process and different layers of filter present within the unit, • Different technologies in water purification • Different features and functionalities of various models, • Safety precautions to be taken while installing, • Manual-based procedure of installing the water purifier | <ul style="list-style-type: none"> • Visit the site and identify the place for installation, • Identify the structural requirements, • Carry out pre-installations/ masonry/electrical work for of adequate water pressure at the inlet source, • Make necessary markings for placement of the water purifier unit. • Demonstrate the process of site inspection and preparation. | 05 |

| | | | | |
|----|---|---|---|-----------|
| 2. | Remove packaging and check accessories | <ul style="list-style-type: none"> Unpacking process, Safety precautions to be taken while installing, Packaging waste disposal procedures Other products of the company. | <ul style="list-style-type: none"> Remove the packaging of water purifier, Check that the product specifications and other supporting accessories, Arrange tools and fitments required for the installation, Dispose the packaging material waste as per norms | 05 |
| 3. | Fix the water purifier at identified location | <ul style="list-style-type: none"> Manual-based procedure of installing water purifier, Tools required for fixing the water purifier, Fixing process of water purifier. | <ul style="list-style-type: none"> Demonstrate to fix water purifier on following points : <ul style="list-style-type: none"> – Check the pre-installation requirements, – Make measurements and drill holes without damage internal wiring, – Mount the filter and fastened the screws, – Drain the inlet line before connecting it to the water purifier, – Connect the outlet pipe to the drain, – Connect the purifier to the power supply point. | 05 |
| 4. | Check water purifier's functioning | <ul style="list-style-type: none"> Post fixing check up process, Functioning of water purifier, Maintenance procedures | <ul style="list-style-type: none"> Illustrate the proper functioning of water purifier as per the desired standard | 03 |
| 5. | Document the installation water purifier | <ul style="list-style-type: none"> Documentation process of installation of water purifier Customer acknowledgment form, Call center number. | <ul style="list-style-type: none"> Perform the documentation of installation on following points : <ul style="list-style-type: none"> – Filling customer acknowledgment form – Call customer care | 02 |
| | | | Total Duration in Hours | 20 |

| Unit 5: Repair and Maintenance of Water purifier | | | | |
|---|--------------------------------------|---|--|---------------|
| Sn | Learning Outcome | Theory (08 Hours) | Practical (12 Hours) | 20 Hrs |
| 1 | Identify the fault in water purifier | <ul style="list-style-type: none"> Parameters such as production rate, water chemistry, drain rate, input water pressure/temperature Different types of water purifiers manufactured by the company, Features of different models of water purifier. | <ul style="list-style-type: none"> Diagnose the fault based on customer interaction and initial inspection Demonstrate to check the water pressure, Carry out basic inspection of feed water valve, tank valve, tubing, housing etc. Demonstrate to identify the fault on part basis inspection. | 08 |

| | | | | |
|--------------------------------|---|---|--|-----------|
| 2 | Replace dysfunctional part in the water purifier unit | <ul style="list-style-type: none"> Functioning of appliance and its various filters. Components of water purifier – valves or wearing out of membrane or filter Troubleshooting knowledge with respect to water purifier Frequently occurring faults such as low/no water production, leaks, bad tasting water etc. | <ul style="list-style-type: none"> Demonstrate to replace the damaged components – valves or wearing out of membrane or filter Demonstrate to remove and replace the faulty module with a functional one. | 07 |
| 3 | Confirm functionality of the repaired unit | <ul style="list-style-type: none"> Reassembly process, Components/modules of the water purifier, Other products of the company Cleaning procedures and other best practices. | <ul style="list-style-type: none"> Demonstrate to reassemble the unit, Check the functioning of all the units after reassemble, Demonstrate and confirm functionality of the unit, Demonstrate the cleaning procedures and other best practices. | 05 |
| Total Duration in Hours | | | | 20 |

| Unit 6: Maintain Health and Safety | | | | |
|---|------------------------------------|--|--|-------------------|
| Sn | Learning Outcome | Theory (05 Hours) | Practical (05 Hours) | 10 Hrs |
| 1. | Observe personal health and safety | <ul style="list-style-type: none"> Exposure to hazardous substances, Possible errors during cleaning the filters. Electric shock and its cause, Environmental factors : annoying noise, water splashing, odours, high humidity, etc. | <ul style="list-style-type: none"> List the safety precautions, policies and procedures to be observed while installing, repair and maintenance, Demonstrate the packaging waste and its disposal, List hazards during repairs, Demonstrate to use the tools and materials properly. | 10 |
| Total Duration in Hours | | | | 10 |

CLASS 10

Part A: Employability Skills

| Sn. | Units | Duration in Hours |
|--------------|--------------------------------|-------------------|
| 1. | Unit 1: Communication Skills | 20 |
| 2. | Unit 2: Self-management Skills | 10 |
| 3. | Unit 3: Basic ICT Skills | 20 |
| 4. | Unit 4: Entrepreneurial Skills | 15 |
| 5. | Unit 5: Green Skills | 10 |
| Total | | 75 |

| Unit 1: Communication Skills – II | | | | |
|-----------------------------------|--|--|---|-----------|
| Sn | Learning Outcome | Theory (12 Hours) | Practical (08 Hours) | 20 Hrs |
| 1. | Demonstrate knowledge of various methods of communication. | <ul style="list-style-type: none"> • Methods of communication • Verbal. • Non-verbal. • Visual. | <ul style="list-style-type: none"> • Writing pros and cons of written, verbal and non-verbal communication • Listing do's and don'ts for avoiding common body language mistakes | 04 |
| 2. | Provide descriptive and specific feedback. | <ul style="list-style-type: none"> • Communication cycle and importance of feedback. • Meaning and importance of feedback. • Descriptive feedback - written comments or conversations. • Specific and non-specific feedback. | <ul style="list-style-type: none"> • Constructing sentences for providing descriptive and specific feedback. | 04 |
| 3. | Apply measures to overcome barriers in communication. | <ul style="list-style-type: none"> • Barriers to effective communication – types and factors. • Measures to overcome barriers in effective. Communication. | <ul style="list-style-type: none"> • Enlisting barriers to effective communication. • Applying measures to overcome barriers in communication. | 04 |
| 4. | Apply principles of communication. | <ul style="list-style-type: none"> • Principles of effective communication. • 7 Cs of effective communication. | <ul style="list-style-type: none"> • Constructing sentences that convey all facts required by the receiver. • Expressing in a manner that shows respect to the receiver of the message • Exercises and games on applying 7Cs of effective communication. | 04 |
| 5. | Demonstrate basic | <ul style="list-style-type: none"> • Writing skills to the following: | <ul style="list-style-type: none"> • Demonstration and practice | 04 |

| | | | | |
|--------------------------------|-----------------|--|---|-----------|
| | writing skills. | <ul style="list-style-type: none"> • Sentence • Phrase • Kinds of Sentences • Parts of Sentence • Parts of Speech • Articles • Construction of paragraph. | of writing sentences and paragraphs on topics related to the subject. | |
| Total Duration in Hours | | | | 20 |

Unit 2: Self-management Skills – II

| Sn | Learning Outcome | Theory (05 Hours) | Practical (05 Hours) | 10 Hrs |
|--------------------------------|---|---|--|-------------------|
| 1. | Apply stress management techniques | <ul style="list-style-type: none"> • Meaning and importance of stress management • Stress management techniques – physical exercise, yoga, meditation • Enjoying, going to vacations and holidays with family and friends • Taking nature walks | <ul style="list-style-type: none"> • Exercises on stress management techniques – yoga, meditation, physical exercises. • Preparing a write-up on an essay on experiences during a holiday trip. | 04 |
| 2. | Demonstrate the ability to work independently | <ul style="list-style-type: none"> • Importance of the ability to work independently. • Describe the types of self-awareness. • Describe the meaning of self-motivation and self-regulation. | <ul style="list-style-type: none"> • Demonstration on working independently goals. • Planning of an activity Executing tasks in a specific period, with no help or directives. • Demonstration on the qualities required for working independently. | 06 |
| Total Duration in Hours | | | | 10 |

Unit 3: Basic ICT Skills – II

| Sn | Learning Outcome | Theory (10 Hours) | Practical (10 Hours) | 20 Hrs |
|-----------|---|--|---|-------------------|
| 1. | Distinguish between different operating systems | <ul style="list-style-type: none"> • Classes of operating systems • Menu, icons and task bar on the desktop • File concept, file operations, file organization, directory structures, and file-system structures • Creating and managing files and folders | <ul style="list-style-type: none"> • Identification of task bar, icons, menu, etc. • Demonstration and practising of creating, renaming and deleting files and folders, saving files in folders and sub-folders, restoring files and folders from recycle bin | 17 |
| 2. | Apply basic skills for care and maintenance of computer | <ul style="list-style-type: none"> • Importance and need of care and maintenance of computer • Cleaning computer components | <ul style="list-style-type: none"> • Demonstration of the procedures to be followed for cleaning, care and maintenance of hardware and software | 03 |

| | | | | |
|--|--|---|--------------------------------|-----------|
| | | <ul style="list-style-type: none"> • Preparing maintenance schedule • Protecting computer against viruses • Scanning and cleaning viruses and removing SPAM files, temporary files and folders | | |
| | | | Total Duration in Hours | 20 |

| Unit 4: Entrepreneurial Skills – II | | | | |
|--|---|---|--|-------------------|
| Sn | Learning Outcome | Theory (06 Hours) | Practical (09 Hours) | 15 Hrs |
| 1. | List the characteristics of successful entrepreneur | <ul style="list-style-type: none"> • Entrepreneurship and society. • Qualities and functions of an entrepreneur. • Role and importance of an entrepreneur. • Myth about entrepreneurship. • Entrepreneurship as a career option. | <ul style="list-style-type: none"> • Writing a note on entrepreneurship as career option. • Collecting success stories of first generation and local entrepreneurs. • Listing the entrepreneurial qualities – analysis of strength and weaknesses. • Group discussion of self-qualities that students feel are needed to become successful entrepreneur. • Collect information and related data for a business. • Make a plan in team for setting up a business. | 15 |
| | | | Total Duration in Hours | 15 |

| Unit 5: Green Skills – II | | | | |
|----------------------------------|--|--|--|-------------------|
| Sn | Learning Outcome | Theory (07 Hours) | Practical (03 Hours) | 10 Hrs |
| 1. | Demonstrate the knowledge of importance, problems and solutions related to sustainable development | <ul style="list-style-type: none"> • Definition of sustainable development. • Importance of sustainable development. • Problems related to sustainable development. | <ul style="list-style-type: none"> • Identify the problem related to sustainable development in the community. • Group discussion on the importance of respecting and conserving indigenous knowledge and cultural heritage. • Discussion on the responsibilities and benefits of environmental citizenship, including the conservation and protection of environmental | 10 |

| | | | | |
|--|--|--|---|-----------|
| | | | values. <ul style="list-style-type: none"> • Preparing models on rain water harvesting, drip / sprinkler irrigation, vermin-compost, solar energy, solar cooker, etc. | |
| | | | Total Duration in Hours | 10 |

Class X, Part B: Vocational Skills

| Sn. | Units | Duration in Hours |
|-----|--|-------------------|
| 1. | Unit 1: Electrical Components and Motor | 25 |
| 2. | Unit 2: Repair and Maintenance of Mixer/ Juicer/ Grinder | 30 |
| 3. | Unit 3: Repair and Maintenance of Microwave Oven | 30 |
| 4. | Unit 4: Maintain Health and Safety | 10 |
| | Total Duration | 95 |

| Unit 1: Electrical Components and Motors | | | | |
|--|--|---|---|-----------|
| Sn | Learning Outcome | Theory (10 Hours) | Practical (15 Hours) | 25 Hrs |
| 1. | Appreciate the role electrical safety components | <ul style="list-style-type: none"> • Relay, • Types of relay, • Circuit breaker, • Fuse – types, use of fuses and its rating. | <ul style="list-style-type: none"> • Identify the parts of a relay, • List the equipment using relay for circuit production, • Identify the different parts of circuit breakers relay, • List the different parameters of circuit breaker. • Identify parts of fuse. | 08 |
| 2. | Appreciate the concepts of motors | <ul style="list-style-type: none"> • Electric field and magnetic field, • Electromagnetic induction, • Fleming's left hand rule and right hand rule, • Lentz law, • Lorentz law, • Winding, • Winding types – wave winding and lap winding, • Single phase supply system. | <ul style="list-style-type: none"> • Draw a magnetic field of bar magnet • Demonstrate an experiment to show electromagnetic induction, • Demonstrate the Fleming's left hand and right hand rule • Identify the gauge of winding wire. | 10 |
| 3. | Demonstrate the functioning of motors. | <ul style="list-style-type: none"> • Introduction to motor, • Parts of motor, • Types of motor, • Working principle of motor, • RPM of motor, • Functioning of motor. | <ul style="list-style-type: none"> • Dismantle the motor and identify the different parts of motor, • Identify different types of motor and read its specifications • Measure the RPM of motor. | 07 |
| | | | Total Duration in Hours | 25 |

| Unit 2: Repair and Maintenance of Mixer/ Juicer/ Grinder | | | | |
|---|--|---|---|-------------------|
| Sn | Learning Outcome | Theory (10 Hours) | Practical (20 Hours) | 30 Hrs |
| 1. | Identify faults in Mixer/ Juicer/ Grinder on the basis of symptoms | <ul style="list-style-type: none"> • Different models of appliances (mixer/ juicer/ grinder), their features and functioning, • functioning of various electromagnetical parts of the mixer/grinder • Frequently occurring faults such as abnormal noise during use, jars. | <ul style="list-style-type: none"> • Demonstrate the usage of mixer/grinder, • Demonstrate to diagnose the fault on initial inspection, • Perform basic tests – power supply, volt ampere test, • Demonstrate to separate and inspect every module of the unit. | 15 |
| 2. | Replace dysfunctional module in mixer/ juicer/ grinder | <ul style="list-style-type: none"> • Components/modules of different mixer/ juicer/ grinder, • Other products of the company. | <ul style="list-style-type: none"> • Demonstrate to remove and replace the faulty module (relay, thermostat, rotatory switch, indicator and motor). | 08 |
| 3. | Confirm functionality of repaired mixer/ juicer/ grinder | <ul style="list-style-type: none"> • Reassembly process of the mixer/ juicer/ grinder, • Factors confirming the proper functioning of the repaired/ replaced part or unit of the mixer/ juicer/ grinder, • Cleaning and maintenance process of mixer/ juicer/ grinder | <ul style="list-style-type: none"> • Demonstrate to reassemble the unit and confirm its functionality of repaired unit • Demonstrate the cleaning procedures, using different jars. | 07 |
| | | | Total Duration in Hours | 30 |

| Unit 3: Repair and Maintenance of Microwave Oven | | | | |
|---|--|---|---|-------------------|
| Sn | Learning Outcome | Theory (10 Hours) | Practical (20 Hours) | 30 Hrs |
| 1. | Identify faults in Microwave Oven on the basis of symptoms | <ul style="list-style-type: none"> • Different models of microwave ovens, their features and functionalities, • Functioning of microwave oven, • Components/modules of different microwave oven, • Troubleshooting of microwave oven, • Frequently occurring faults such as intermittent heating, no heating, timing problem, display problem. | <ul style="list-style-type: none"> • Diagnose the fault based on initial inspection, • Perform basic tests – power supply, volt ampere test, • Demonstrate to separate and inspect every module of the microwave oven. | 15 |
| 2. | Replace dysfunctional module in microwave | <ul style="list-style-type: none"> • Energy ratings such BEE rating and concepts of e waste | <ul style="list-style-type: none"> • Demonstrate to remove and replace the faulty module . | 08 |

| | | | | |
|--------------------------------|--|---|--|-----------|
| 3. | Confirm functionality of repaired microwave oven | <ul style="list-style-type: none"> Reassembly process of the microwave oven, Factors confirming the proper functioning of the repaired/ replaced part or unit of the microwave oven, Cleaning and maintenance process of microwave oven. | <ul style="list-style-type: none"> Demonstrate to reassemble the unit Demonstrate and confirm functionality of the repaired unit Demonstrate the cleaning and maintenance procedures. | 07 |
| Total Duration in Hours | | | | 30 |

| Unit 4: Workplace Health and Safety Measures | | | | |
|---|--|---|--|-------------------|
| Sn | Learning Outcome | Theory (5 Hours) | Practical (5 Hours) | 10 Hrs |
| 1. | Observe the workplace safety measures for health | <ul style="list-style-type: none"> Electrical hazard Chemical hazard Fire extinguisher First aid for electrical emergency | <ul style="list-style-type: none"> Illustrate the safety precaution and remedies while working with the electrical system. Demonstrate the use of fire extinguisher Demonstrate the use of Safety helmets, ear plugs, shoes, gloves, goggles etc. | 10 |
| Total Duration in Hours | | | | 10 |

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 the site of service center or shop carrying out the installation, repair and maintenance of home appliances – water purifier, mixer/ juicer/ grinder and microwave oven, and observe the following: Location, Site, Tools and Equipment, Raw Materials, Space parts, Workers behavior. During the visit, students should obtain the following information from the owner or the supervisor of the OFC site:

- Types, specifications, costs and brands of appliances – water purifier, mixer/ juicer/ grinder and microwave oven,
- Installation process of these appliances,
- Tools and equipment used for installation, repair and maintenance of these appliances,
- Safety precautions to be observed during installation, repair and maintenance
- Specifications and cost of tools and equipment
- Total expenditure of the project
- Manpower engaged
- Wages of workers
- Qualifications and skills of workers
- 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. Clamp Meter
2. Digital Multimeter
3. Electrical Drill
4. Lead Solder
5. Pipe wrench
6. Microwave Oven
7. Mixer
8. Juicer
9. Grinder
10. Screw Driver Set
11. Soldering Flux
12. Soldering Iron
13. Spanner Set
14. TDS Meter
15. Water Pressure Gauge
16. Water Purifier (RO)
17. Water Purifier (UV)
18. Water Purifier (UF)
19. Spares for micro wave oven As required
20. Hand glove 4 pairs
21. Radiation leakage tester 1 Nos

8. TEACHER'S/TRAINER'S QUALIFICATION

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 | B.E./ B.Tech in Electrical/ Electronics / Telecommunication with one year experience in the relevant field OR Diploma in Electrical/ Electronics/ Electronics/ Telecommunication from recognized board of technical education with two years experience in the relevant field. | The candidate should have a minimum of 3 year of work experience in the same job role. S/He should be able to communicate in English and local language. S/He should have knowledge of equipment, tools, material, Safety, Health & Hygiene. | 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 following ways:

1. 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**
2. 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:

- Prepare session plans and deliver sessions which have a clear and relevant purpose and which engage the students;

- Deliver education and training activities to students, based on the curriculum to achieve the learning outcomes;
- Make effective use of learning aids and ICT tools during the classroom sessions;
- 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;
- 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;
- Identify the weaknesses of students and assist them in up-gradation of competency;
- Cater to different learning styles and level of ability of students;
- Assess the learning needs and abilities, when working with students with different abilities
- Identify any additional support the student may need and help to make special arrangements for that support;
- 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:

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

9. LIST OF CONTRIBUTORS

1. Sh. Parag Shrivastava, Consultant in Electronics, Department of Engineering and Technology, PSS Central Institute of Vocational Education (PSSCIVE), Shyamla Hills, Bhopal
2. Dr. Dipak D. Shudhalwar, Associate Professor (CSE), Department of Engineering and Technology, PSS Central Institute of Vocational Education (PSSCIVE), Shyamla Hills, Bhopal – 462 002, M.P., India, Email: dds.ncert@nic.in, dipakds@yahoo.com

PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION
Shyamla Hills, Bhopal – 462 002, M.P., India