

LEARNING OUTCOME BASED VOCATIONAL CURRICULUM

Job Role: Optical Fiber Technician

(QUALIFICATION PACK: Ref. Id. TEL/Q6401)

SECTOR: Telecommunication

Classes 11 and 12

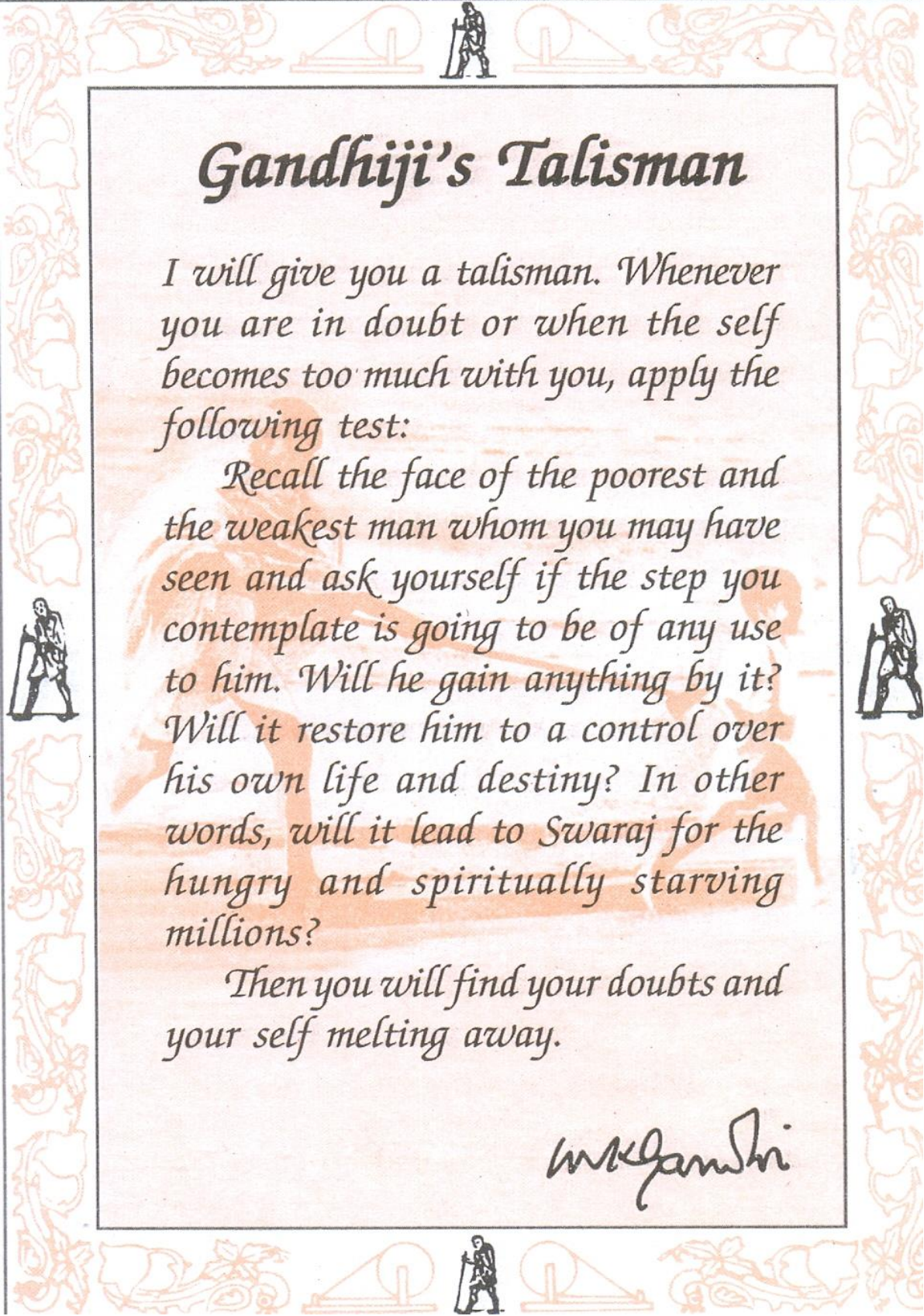


PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

(a constituent unit of NCERT, under MHRD, Government of India)

Shyamla Hills, Bhopal- 462 013, M.P., India

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



Gandhiji's Talisman

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

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

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

M. Gandhi

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CURRICULUM**

Telecom – Optical Fiber Technician

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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 learning outcome based curricula is to bring about the improvement in teaching-learning process and working competences through learning outcomes embedded in the vocational subject.

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

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

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

Hrushikesh Senapaty
Director
National Council of Education Research and Training

PREFACE

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 fulfil the needs of the society and the world of work. In order to honour its commitment to the nation, the PSSCIVE has initiated the work on developing learning outcome based curricula with the involvement of faculty members and leading experts in respective fields. It is being done through the concerted efforts of leading academicians, professionals, policy makers, partner institutions, Vocational Education and Training experts, industry representatives, and teachers. The expert group through a series of consultations, working group meetings and use of reference materials develops a National Curriculum. Currently, the Institute is working on developing curricula and courseware for over 100 job roles in various sectors.

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

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

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

RAJESH P. KHAMBAYAT
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 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 Telecom Sector Skill Council (TSSC) for their academic support and cooperation in the development of curricula.

We are grateful to the expert contributors Shashank Pancholi, Consultant in Telecom, PSSCIVE, NCERT, Bhopal Dipak D. Shudhalwar, Associate Professor (CSE), and Saurabh Prakash, Head, Engineering and Technology Department, PSSCIVE for their earnest effort and contributions in the development of this learning outcome based curriculum. Their 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 D. Shudhalwar, Associate Professor (CSE) and Head Computer Center, 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 Computer Center, PSSCIVE, for bringing out this curriculum in the final form.

PSSCIVE Team

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1. COURSE OVERVIEW

COURSE TITLE: Optical Fiber Technician

An Optical fibre splicer is responsible for ensuring efficient splicing of the optical fibre cables and supports in optical fibre installation and in carrying out fibre testing using OTDR and power meter.

This job requires the individual to work in field set-up and be able to handle pressure situations. He should have basic written and oral communication skills and should be able to apply practical judgement to successfully perform the assigned responsibilities.

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

- Communicate effectively with the customers;
- Acquaint self with facets of trenching, laying, jointing and blowing of interpret test reports, as made route diagrams and other numerical data
- create and maintain effective working relationships and team environment
- Take initiatives and progressively assume increased responsibilities
- Share knowledge with other team members and colleagues
- utilize appropriate optical equipments like cleaver, mechanical and fusion splicing kit, protection sleeves, fiber stripper, fiber reinforced plaster during splicing and jointing
- Operate optical test equipments like OTDR and power meter
- undertake GPS based route survey to capture appropriate site details
- Utilize appropriate fiber like single mode and multi-mode optical fibre based on specific requirements
- lay duct using specially designed dispensers
- Carry out splicing in a manner ensuring minimum reflectance loss, optical return loss, insertion loss
- Perform optical link testing as per standard process
- Utilize appropriate optical test equipment's like OTDR, power meter based on test requirements
- Perform OFC tests for quality check or Acceptance testing
- Prepare test reports in the specified formats
- Rectify deviations in the test reports by reperforming the splicing/ testing operations
- Perform OTDR test as per standard process and summarize OTDR reports for records and review.
- Perform Power meter tests as per standard process and identify instances of cross-fibres
- Appropriately mark/ tag cables to identify direction and route
- Utilize suitable OFC connectors are used based on the termination equipment
- cables by: authenticating and confirming cable drum is placed near site,
- Aggregate potential knowledge and skill to vouchsafe the importance
- Of health and safety by: safeguard compliance of safety regulations, personal protection and environmental conditions.
- Comprehend and initiate the importance of report and record by:
- Ensuring cable id, cable markings, drum numbers, OTDR findings, are
- identify appropriate cables for splicing based on sequence or color coding to
- avoid occurrence of instances of cross fibers

- Interpret As made documents and perform update based on actual cable routes, joints
- Interpret OTDR and power meter test results to identify and localize faults and/or measure optical losses
- Interpret optical link testing results to ensure link margins Documented for future reference.
- Work as Optical Fiber Splicing Technician
- Work as Optical fiber Laying Technician.
- Work as OTDR Technician.
- Use techniques to provide services based on customer's needs and wants;
- Administer first aid to a casualty with small cuts, grazes, bruises, external bleeding, minor burns and scalds

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

COURSE LEVEL: This is a beginner level course. On completion of this course, a student can take up an Intermediate level course for a job role in Horticulture in Class XI and XII.

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 Class 9 and 10 opting for vocational subject along with general education subjects.

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

CLASS 11			
	Units	No. of Hours for Theory and Practical 200	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: Introduction to fibers Optics	70	

	Unit 2: Network Design and Documents	35	40
	Unit 3: Tools, Equipment	35	
	Unit 4: Maintaining Network Installation	35	
	Total	175	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
	Total	05	10
	Grand Total	300	100

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

CLASS 12			
	Units	No. of Hours for Theory and Practical 200	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 Occupation Health, Hygiene and First Aid Practices	20	40
	Unit 2: Customer Service	20	
	Unit 3: Restoration and maintenance	40	
	Unit 4: Network testing	35	
	Unit 5: Co-ordination and communication skills	30	
	Unit 6: Management Safety and Precautions	25	
	Total	170	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
	Total	05	10
	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. 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 competencies.

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

KNOWLEDGE ASSESSMENT (THEORY)

Knowledge Assessment should include two components: one comprising of internal assessment and second an external examination, including theory examination to be conducted by the Board. The assessment tools shall contain components for testing the knowledge and application of knowledge. The knowledge test can be objective paper based test or short structured questions based on the content of the curriculum.

WRITTEN TEST

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

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

Duration: 3 hrs

Max. Mark: 40

	Typology of Question	No. of Questions			Marks
		Very Short Answer (1 mark)	Short Answer (2 Marks)	Long Answer (3 Marks)	
1.	Remembering – (Knowledge based simple recall questions, to know specific facts, terms, concepts, principles, or theories; identify, define or recite, information)	3	2	2	13
2.	Understanding – (Comprehension – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information)	2	3	2	14
3.	Application – (Use abstract information in concrete situation, to apply knowledge to new situations: Use given content to interpret a situation, provide an example, or solve a problem)	0	2	1	07
4.	High Order Thinking Skills – (Analysis and Synthesis – Classify, compare, contrast, or	0	2	0	04

	differentiate between different pieces of information; Organize and/ or integrate unique pieces of information from a variety of sources)				
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 organised as part of the project work. Field visits can be followed by a small-group work/project work. When the class returns from the field visit, each group might be asked to use the information that they have gathered to prepare presentations or reports of their observations. Project work should be assessed on the basis of practical file or student portfolio.

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

Viva voce allows candidates to demonstrate communication skills and content knowledge. Audio or video recording can be done at the time of viva voce. The number of external examiners would be decided as per the existing norms of the Board and these norms should be suitably adopted/adapted as per the specific requirements of the vocational subject.

Viva voce should also be conducted to obtain feedback on the student's experiences and learning during the project work/field visits.

5. UNIT CONTENTS

CLASS 11

Part A: Employability Skills

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

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

Unit 2: Self-management - III			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Duration (25 Hrs)
1. Demonstrate impressive appearance and grooming	<ol style="list-style-type: none"> Describe the importance of dressing appropriately, looking decent and positive body language Describe the term grooming Prepare a personal grooming checklist Describe the techniques of self-exploration 	<ol style="list-style-type: none"> Demonstration of impressive appearance and groomed personality Demonstration of the ability to self- explore 	07
2. Demonstrate team work skills	<ol style="list-style-type: none"> Describe the important factors that influence in team building Describe factors influencing team work 	<ol style="list-style-type: none"> Group discussion on qualities of a good team Group discussion on strategies that are adopted for team building and team work 	08
3. Apply time management strategies and techniques	<ol style="list-style-type: none"> Meaning and importance of time management – setting and prioritizing goals, creating a schedule, making lists of tasks, balancing work and leisure, using different optimization tools to break large tasks into smaller tasks. 	<ol style="list-style-type: none"> Game on time management Checklist preparation To-do-list preparation 	10
Total			25

Unit 3: Information and Communication Technology - III			
Learning Outcome	Theory (08 hrs)	Practical (12 hrs)	Duration (20 Hrs)
1. Create a document on word processor	<ol style="list-style-type: none"> Introduction to word processing. Software packages for word processing. Opening and exiting the word processor. Creating a document 	<ol style="list-style-type: none"> Demonstration and practice of the following: <ul style="list-style-type: none"> Listing the features of word processing Listing the software packages for word processing Opening and exit the word processor Creating a document 	10

<p>2. Edit, save and print a document in word processor</p>	<ol style="list-style-type: none"> 1. Editing text 2. Wrapping and aligning the text 3. Font size, type and face. 4. Header and Footer 5. Auto correct 6. Numbering and bullet 7. Creating table 8. Find and replace 9. Page numbering. 10. Printing document. 11. Saving a document in various formats. 	<p>1. Demonstration and practising the following:</p> <ul style="list-style-type: none"> • Editing the text • Word wrapping and alignment • Changing font type, size and face • Inserting header and footer • Removing header and footer <ol style="list-style-type: none"> 1. Using autocorrect option 2. Insert page numbers and bullet 3. Save and print a document 	<p>10</p>
<p>Total</p>			<p>20</p>

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

	8. Involving in activity	5. Group activity for suggesting brand names, names of enterprises, etc.	
Total			25

Unit 5: Green Skills - III			
Learning Outcome	Theory (07 hrs)	Practical (08 hrs)	Duration (15 Hrs)
1. Describe importance of main sector of green economy	1. Main sectors of green economy- E-waste management, green transportation, renewal energy, green construction, water management 2. Policy initiatives for greening economy in India	1. Preparing a poster on any one of the sectors of green economy 2. Writing a two-page essay on important initiatives taken in India for promoting green economy	08
2. Describe the major green Sectors/Areas and the role of various stakeholder in green economy	1. Stakeholders in green economy 2. Role of government and private agencies in greening cities, buildings, tourism, industry, transport, renewable energy, waste management, agriculture, water, forests and fisheries	1. Preparing posters on green Sectors/Areas: cities, buildings, tourism, industry, transport, renewable energy, waste management, agriculture, water, forests and fisheries	07
Total			15

Part B: Vocational Skills

S.No.	Units	Duration (Hrs)
1.	Unit 1: Introduction to fibers Optics	70
2.	Unit 2: Network Design and Documents	35
3.	Unit 3: Tools, Equipment	35
4.	Unit 4: Maintaining Network Installation	35
	Total	175

Unit 1: Introduction to fibers Optics			
Learning Outcome	Theory	Practical Activities	Duration in Hours
1. Explain optical fibers.	1. Introduction to optical fiber 2. Define the optical	1. Identify the type of cable. 2. Observe the different	10

	<p>fiber</p> <p>3. Different kind of optical fiber cable.</p> <p>4. Application of optical fiber cable.</p>	<p>kind of optical fiber cable.</p> <p>3. List the application of optical fiber cable.</p>	
2. Demonstrate osi model.	<p>1. Define osi model</p> <p>2. Define osi layers</p> <p>3. Working of layers</p> <p>4. Emphasis on first 3 layer of osi layers</p>	<p>1. Draw OSI model</p> <p>2. Demonstrate and explain of different layers practically</p>	05
3. Demonstrate the working principle of optical fibre	<p>1. Working of ofc</p> <p>2. Principles of optical</p> <p>3. Communication system of ofc</p> <p>4. Characteristics of optical fiber</p> <p>5. Attenuation of fibers.</p> <p>6. Bending in fibers.</p>	<p>1. Demonstration the working of optical</p> <p>2. Various inputs required for establishing transmission.</p> <p>3. Demonstration of the attenuation of fibers.</p> <p>4. Demonstration of the</p> <p>5. Bending in fibers</p>	10
4. Apply manners, connectors of fiber	<p>1. Technical terms related to optical fiber</p> <p>2. Connectors of fiber</p> <p>3. Uses of connectors</p> <p>4. Types of connectors like</p> <p>5. St connectors</p> <p>6. Sc connectors</p> <p>7. Fc connectors</p> <p>8. Fddi connectors</p> <p>9. Eson connectors of fiber</p>	<p>1. Visit to a site for applying manners of connectors.</p> <p>2. Demonstration of the connectors</p> <p>3. Use the connectors</p> <p>4. Identify the connectors.</p> <p>5. Differentiate between the connectors</p> <p>6. Uses of connectors at different places</p>	10
5. Demonstrate manners of splicing of fibers	<p>1. Splicers</p> <p>2. Role of splicing</p> <p>3. Type of splicing</p> <p>4. Process of splicing</p> <p>5. Procedure of listing steps.</p>	<p>1. Demonstration of splicing machine.</p> <p>2. Make presentation of splicing procedure..</p> <p>3. Prepare list for splicing procedure.</p>	15
6. Carry out inspection of splicing	<p>1. Process of splicing.</p> <p>2. Process of stripping</p> <p>3. Process of cleaning</p> <p>4. Process of cleaving</p> <p>5. Different types of splicing</p>	<p>1. Demonstration of splicing</p> <p>2. Process of splicing</p> <p>3. Steps to approach</p> <p>4. Types of splicing</p> <p>5. Watch the videos of splicing process.</p>	10
7. Maintain records of splicing	<p>1. Testing of splicing.</p> <p>2. Splice problem</p> <p>3. Troubleshooting.</p>	<p>1. Testing of splicing by tools and observation</p> <p>2. Splice problem during practical</p> <p>3. Overcome from the problems</p>	05

		4. Troubleshooting.	
8. Identify the types of splicing	1. Fusion splicing procedure 2. Digital splicing. 3. Thermo shrinking 4. Maintenance schedule.	1. Demonstration of fusion splicing procedure 2. Demonstrate the video of digital splicing. 3. Demonstrate the video of thermo shrinking 4. Demonstrate the video of maintenance schedule	05
		Total Duration	70

Unit 2: Network Design and Documents			
Learning Outcome	Theory	Practical Activities	Duration in Hours
1. Describe the basic of OFC network	1. Types of fiber optic network 2. Design of fiber optic network 3. Transmission in fiber optic network	1. Identification of OFC networks. 2. Demonstrate the OFC network. 3. Transmission process demonstration	10
2. Identify the route and materials used in process	1. Transmission equipment, 2. Study inspection of route plan, 3. Precautions at route 4. Managing of fields 5. Study the documenting project	1. Carrying out inspection of route plan 2. Observe the route for Understanding the markings behaviors at field. 3. Observation of the documents of projects.	10
3. Comprehend reporting and documenting	1. Study about the reports 2. Importance of reports 3. Approach of preparing reports 4. Documenting the status of installation. 5. Documenting the status of re-installation. 6. Documenting the status of repairing 7. Cabling process 8. Planting process	1. Observation of reports of projects 2. Process to understand the reports 3. Visit to site and make note of installation process. 4. Visit to site and make note of the re-installation process 5. Visit to site and make note of repairing work on site 6. Visit to site and make note of cabling process 7. Visit to site and make note of planting	15

		process	
		Total Duration	35

Unit 3: Tools, Equipment			
Learning Outcome	Theory	Practical Activities	Duration in Hours
1. Demonstrate safe use of tools, equipment and materials used in network installation	<ol style="list-style-type: none"> 1. Uses of various tools and equipment used in network installation - digging, levelling, cutting, etc. 2. What is planning 3. Planning procedure 4. Highlighting the key points of project 5. Management time 6. Scheduling time 7. Organization of resource, as per project plan 	<ol style="list-style-type: none"> 1. Identification of tools and equipment used in network installation 2. Reading the labels and understanding the hazards in use of tools, equipment, chemicals 3. Demonstration of the knowledge of undertaking basic safety checks before operation of all tools and equipment 4. Demonstration of safe use of tools and equipment for various purposes. 	20
2. Maintaining tools and equipment	<ol style="list-style-type: none"> 1. Study the procedure for maintaining tools 2. Study the procedure for maintaining equipment 	<ol style="list-style-type: none"> 1. Demonstration of the procedure of planning with tools and equipment 2. Demonstration of the procedure of planning with equipment 3. Prepare the list of tools and equipment to be used. 	05
3. Records of tools and equipment	<ol style="list-style-type: none"> 1. Records kept for inventory and maintenance of tools and equipment 2. Records kept for inventory and maintenance of equipment 3. Cost of the equipment's. 	<ol style="list-style-type: none"> 1. Recording information about tools and equipment and their maintenance. 2. Survey the market for the cost of the equipment's 	10
		Total Duration	35

Unit 4: Maintaining Network Installation			
Learning Outcome	Theory	Practical Activities	Duration in Hours
1. Demonstrate network installation.	1. Definition Network Installation 2. Inspection process 3. Procedure for cable trenching	1. Demonstration of the procedure for Maintaining Network Installation etc.	15
2. Prepare maintains approach	1. Importance of maintenance approach 2. Cable laying process 3. Jointing process of fiber 4. Fiber blowing activities	1. Preparation list of the preferred approach for maintains work. 2. Visit to the site and see the cable laying process 3. Observe fiber blowing activity	10
3. Preparation of installation	1. Tools required for Installation 2. Type of tests, etc	1. Demonstration of the procedure of the tools required for installation, tests, etc 2. Watch videos for preparing installation	05
4. Identifying network problems	1. Possible factors feedback mechanism, etc. 2. Factors to be considered network robust 3. Fault free network	1. Make a list of network problem 2. Checking the network fault 3. Report the fault to be come in field 4. Create robust network 5. Videos of fault free network.	05
		Total Duration	35

CLASS 12

Part A - Employability Skills

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

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

Unit 2: Self-management -IV			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Total Duration (25 Hrs)
1. Describe the various factors influencing self-motivation	1. Finding and listing motives (needs and desires); 2. Finding sources of motivation and inspiration (music, books, activities);expansive thoughts;living fully in the present moment;dreaming big	1.Group discussion on identifying needs and desire 2. Discussion on sources of motivation and inspiration	10
3. Describe the basic personality traits, types and disorders	1. Describe the meaning of personality 2. Describe how personality influence others 3. Describe basic personality traits 4. Describe common personality disorders- paranoid, antisocial, schizoid, borderline, narcissistic, avoidant,	1. Demonstrate the knowledge of different personality types	15

	dependent and obsessive		
Total			25

Unit 3: Information and Communication Technology - IV			
Learning Outcome	Theory (08 hrs)	Practical (12 hrs)	Total Duration (20 Hrs)
1. Perform tabulation using spreadsheet application	<ol style="list-style-type: none"> 1. Introduction to spreadsheet application 2. Spreadsheet applications 3. Creating a new worksheet 4. Opening workbook and entering text 5. Resizing fonts and styles 6. Copying and moving 7. Filter and sorting 8. Formulas and functions 9. Password protection. 10. Printing a spreadsheet. 11. Saving a spreadsheet in various formats. 	<ol style="list-style-type: none"> 1. Demonstration and practice on the following: <ul style="list-style-type: none"> • Introduction to the spreadsheet application • Listing the spreadsheet applications • Creating a new worksheet • Opening the workbook and enter text • Resizing fonts and styles • Copying and move the cell data • Sorting and Filter the data • Applying elementary formulas and functions • Protecting the spreadsheet with password • Printing a spreadsheet • Saving the spreadsheet in various formats. 	10
2. Prepare presentation using presentation application	<ol style="list-style-type: none"> 1. Introduction to presentation 2. Software packages for presentation 3. Creating a new presentation 4. Adding a slide 5. Deleting a slide 6. Entering and editing text 7. Formatting text 8. Inserting clipart and images 9. Slide layout 10. Saving a presentation 11. Printing a presentation document. 	<ol style="list-style-type: none"> 1. Demonstration and practice on the following: <ul style="list-style-type: none"> • Listing the software packages for presentation • Explaining the features of presentation • Creating a new presentation • Adding a slide to presentation. • Deleting a slide • Entering and edit text • Formatting text • Inserting clipart and images • Sliding layout • Saving a presentation • Printing a presentation document 	10
Total			20

Unit4:Entrepreneurship Development - IV			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Total Duration (25 Hrs)
1. Identify the general and entrepreneurial behavioural competencies	<ol style="list-style-type: none"> 1. Barriers to becoming entrepreneur 2. Behavioural and entrepreneurial competencies – adaptability/decisiveness, initiative/perseverance, interpersonal skills, organizational skills, stress management, valuing service and diversity 	<ol style="list-style-type: none"> 1. Administering self-rating questionnaire and score responses on each of the competencies 2. Collect small story/ anecdote of prominent successful entrepreneurs 3. Identify entrepreneurial competencies reflected in each story and connect it to the definition of behavioural competencies 4. Preparation of competencies profile of students 	10
2. Demonstrate the knowledge of self-assessment of behavioural competencies	<ol style="list-style-type: none"> 1. Entrepreneurial competencies in particular: self-confidence, initiative, seeing and acting on opportunities, concern for quality, goal setting and risk taking, problem solving and creativity, systematic planning and efficiency, information seeking, persistence, influencing and negotiating, team building 	<ol style="list-style-type: none"> 1. Games and exercises on changing entrepreneurial behaviour and development of competencies for enhancing self-confidence, problem solving, goal setting, information seeking, team building and creativity 	15
Total			25

Unit 5: Green Skills - IV			
Learning Outcome	Theory (05 hrs)	Practical (10 hrs)	Total Duration (15 Hrs)
1. Identify the role and importance of green jobs in different sectors	<ol style="list-style-type: none"> 1. Role of green jobs in toxin-free homes, 2. Green organic gardening, public transport and energy conservation, 3. Green jobs in water conservation 4. Green jobs in solar and wind power, waste reduction, reuse and recycling of wastes, 	<ol style="list-style-type: none"> 1. Listing of green jobs and preparation of posters on green job profiles 2. Prepare posters on green jobs. 	15

	<ol style="list-style-type: none"> 5. Green jobs in green tourism 6. Green jobs in building and construction 7. Green jobs in appropriate technology 8. Role of green jobs in Improving energy and raw materials use 9. Role of green jobs in limiting greenhouse gas emissions 10. Role of green jobs minimizing waste and pollution 11. Role of green jobs in protecting and restoring ecosystems 12. Role of green jobs in support adaptation to the effects of climate change 		
Total			15

Part B–Vocational Skills

S.No.	Units	Duration (Hrs)
1.	Unit 1 Occupation Health, Hygiene and First Aid Practices	20
2.	Unit 2: Customer Service	20
3.	Unit 3: Restoration and maintenance	40
4.	Unit 4: Network testing	35
5.	Unit 5: Co-ordination and communication skills	30
6.	Unit 6: Management Safety and Precautions	25
	Total	170

Unit 1: Occupation Health, Hygiene and First Aid Practices			
Learning Outcome	Theory	Practical Activities	Duration in Hours
1. Recognize and adopt strategies for preventing hazardous conditions and work practices	<ol style="list-style-type: none"> 1. Types of hazards 2. Common hazards at field 3. Principles of safety and health 4. Procedure and steps to be taken to report any accident, incident or problem without delay to an appropriate person 5. Applicable hygiene 	<ol style="list-style-type: none"> 1. Reading of the manuals for tools, equipment and materials used in field 2. Demonstration of the correct and safe use of tools, equipment and materials 3. Demonstration of the correct and safe storage of tools, equipment and 	12

	and safety standards, regulations, and codes for site	materials 4. Discussion on the procedure for reporting any accident, incident or problem without delay to an appropriate person and taking action to reduce further danger	
2. Administer first aid or undertake most important action in a life-threatening emergency	1. Procedure for providing first aid in case of medical emergency – cut, burns, bites, grazes, bruises electric shock, external bleeding, etc.	1. Demonstration of basic first aid practices adopted for cut, burns, snake bites, grazes, bruises, external bleeding, dog bites, bee bites, and other injuries 2. Demonstration of first aid care for a conscious and an unconscious victim with an obstructed airway	6
3. Undertake physical and biological methods of treating waste materials	1. Procedure for treating waste materials using physical and biological methods	1. Disposing waste safely and correctly in a designated area	2
Total Duration			20

Unit 2: Customer Service			
Learning Outcome	Theory	Practical Activities	Duration in Hours
1. Identify customer's needs and expectations	1. Meaning of customer and consumer 2. Differences between customer service and customer care 3. Roles and functions of associated regulatory organisations providing customer protection and redress, such as consumer forum, etc.	1. Identification of the key elements of consumer legislation and the functions of associated regulatory organisations providing customer protection and redress, such as consumer forum, etc.	6
2. Communicate effectively with customers	1. Ways to communicate effectively and respectfully with customers – greeting politely, listening patiently and showing	1. Role plays on greetings customers, making eye contact and smiling when face to face with a customer 2. Asking for repetition	6

	positive attitude	and clarification 3. Interrupting someone politely 4. Role plays on talking on telephone	
3. Identify and express about the salient features of the products and materials sold	1. Features and benefits of products and materials sold	1. Making sentences using comparatives and superlatives for comparing products 2. Reading labels and describing the benefits of the products 3. Describing connections and work 4. Responding to customer's request with a sense of urgency	5
4. Responding to complaints of customers	1. Meaning of unsatisfactory services and products 2. Meaning of good service 3. Meeting customer needs, such as productivity of work	1. Demonstration of the procedure and sentences used for thanking customer for sharing information regarding the product and apologizing for the customer's negative experience 2. Demonstration of the readiness and willingness to listen to the customer 3. Demonstration of the procedure of reporting complaint to the appropriate person or supervisor	3
		Total Duration	20

Unit 3: Restoration and maintenance			
Learning Outcome	Theory	Practical Activities	Duration in Hours

1. Identify the Restoration techniques and interfaces	1. Methods of Restoration 2. Restoration techniques 3. Procedures of restoration process 4. Environmental conditions for restoration 5. Preparation of restoration of optical fiber propagation 6. Tools, equipment and materials used for interfaces	1. Identification of Signal tester 2. Identification of OTDR, 3. Identification of 4. Power meter, 5. Identification of splicer machine, 6. Demonstration of uses of tools and equipment used for interfaces.	20
2. Explain maintenance schedule.	1. Types of maintenances 2. Precautions to be taken while preparing maintenance plan 3. Procedure for repair	1. Demonstration and practice of the procedure of preparing maintenance plan	10
3. Propagate a fiber testing technique	1. Types of Testing 2. Precautions to be taken while Splicing 3. Procedure for testing by through OTDR and power meter tests	1. Demonstration and practice of the procedure of splicing through OTDR 2. Power meter testing	10
Total Duration			40

Unit 4: Network testing			
Learning Outcome	Theory	Practical Activities	Duration in Hours

1. Identify the various stages of network testing.	1. Network testing. 2. Stages in the network testing. 3. Benefits of testing	1. Identification of the various networks. 2. Identification of the network testing stages.	05
2. Testing of OFC by different methods.	1. Personal protective equipment – gloves, boots, hat 2. Selection of testing equipment's. 3. Testing through OTDR 4. Testing through power meter. 5. Testing through other tools 6. Quality of test	1. Wearing personal protective equipment 2. Demonstration and practice of the procedure of testing 3. Demonstration of OTDR testing 4. Demonstration of power meter. 5. Demonstration of other tools testing. 6. Benchmark of quality.	15
3. Preparation for unit and managing faults in network.	1. Faults and localization 2. Their rectification 3. Learning about maintenance testing of 4. Dark/spare OFC and pops	1. Identification of faults. 2. Demonstration of rectification process. 3. Use of reference test cable.	10
4. Describe fault and identify equipment's	1. Describe Equipment, tests runs for the fault identifications 2. Learning about mating adapter 3. Use of fiber tracer 4. How to use Fiber Optic Cable Visual Fault locator to locate breakage in the cable 5. What is the optical microscope role and their applications	1. Demonstration of procedure for test using appropriate technique- 2. Demonstration of fiber tracer 3. Demonstration of optical microscope and uses 4. Demonstrate the use Fiber Optic Cable Visual Fault locator to locate breakage in the cable	05
		Total Duration	35

Unit 5: Co-ordination and communication skills			
Learning Outcome	Theory	Practical Activities	Duration in Hours

<p>1. Interact with Co-workers</p>	<ol style="list-style-type: none"> 1. Preparing Service Reports 2. Preparing delivery Documentation 3. Preparing minutes of Meeting 4. Managing Team Members 5. Managing Time Targets and Commitments to 6. Customers 7. Preparing faulty parts report 8. Understanding Material Work flow (Stores to Production) 9. Writing e-mails 10. Communicating any potential hazards at a particular location 11. Assist colleagues with resolving field problems 12. Share knowledge and experience gained through every day work 13. Clearly demarcate roles of each team member 	<ol style="list-style-type: none"> 1. Prepare Service reports and delivery documentation 2. Email minutes of Meeting 3. Prepare faulty parts report 4. Write e-mails specific to the work assigned 5. Communicate any potential hazards at a particular location 6. Resolve inter-personnel conflicts and achieve 7. Smooth workflow 8. Pass on customer complaints to colleagues in a respective geographical area 9. Assist colleagues with resolving field problems 10. Share knowledge and experience gained through every day work 11. Clearly demarcate roles of each team member 	<p>10</p>
<p>2. Explain professional Skills</p>	<ol style="list-style-type: none"> 1. Reading Job sheets Preparing indents, invoices and 2. Maintaining logs Using MS Excel and MS Word for Record keeping 3. Preparing As-built documentation, Ferrule list 4. Sharing and delegation of Tasks 5. Preparing Task Reports 	<ol style="list-style-type: none"> 1. Prepare indents, invoices by reading job sheet 2. Maintain logs Using MS Excel and MS Word 3. Ensure compliance with site risk control requirements as per company's norms 	<p>10</p>
<p>3. Introduce soft skills</p>	<ol style="list-style-type: none"> 1. Interacting with customer 2. Achieve 100% compliance with health and 3. Safety guidelines and rules 4. Asking customer question for proper feedback 	<ol style="list-style-type: none"> 1. Interact with customer prior to visit. 2. Keep work area clean and organized 3. Follow health and 4. Safety guidelines and rules 5. Escalate customer concerns that cannot be handled on field 	<p>10</p>

	5. Preparing feedback report on work standards and customer satisfaction	6. Resolve personnel issues 7. Receive feedback on work standards and customer satisfaction	
		Total Duration	30

Unit 6: Management Safety and Precautions			
Learning Outcome	Theory	Practical Activities	Duration in Hours

<p>1. Demonstrate safety tools</p>	<p>1. Basic Safety in handling fiber cables 2. Basic Safety in handling connectors 3. Safety in handling with source 4. Safety in handling with Connectors 5. Safety in handling With Joints 6. Safety in handling With Tools</p>	<p>1. Demonstration of basic Safety in handling fiber cables 2. Demonstration of basic Safety in handling connectors 3. Demonstration of basic Safety in handling with source 4. Demonstration of basic Safety in handling with Connectors 5. Demonstration of basic Safety in handling fety in handling With Joints 6. Demonstration of basic Safety in handling With Tools</p>	<p>10</p>
<p>2. Describe the importance of Personal Safety</p>	<p>1. Need of personnel safety 2. Safety during the construction and installation of Earthing and Trenching 3. What are the Personal protection equipment like anti-static bands</p>	<p>1. Demonstrate the Safety procedure for construction and installation of Earthing and Trenching</p>	<p>05</p>
<p>3. Workplace Asset management</p>	<p>1. Creating Tool list and Storage of tools 2. Procedure of Calibrating Measuring instruments 3. Managing Tool Crib library 4. What is proper earthing of the equipment</p>	<p>1. Create Tool list 2. Calibrate measuring instruments 3. Manage Ensure proper earthing of the equipment. Tool Crib library 4. Return the tools to the store after completion of work 5. Cleaning of tools and equipment's.</p>	<p>05</p>
<p>4. Identify the materials for safety.</p>	<p>1. Describe the equipment's and uses 2. Describe the Safety Harness and their uses 3. Prepare safety tools like Helmet, Gloves, Eye glasses earplugs, Nose mask etc. 4. Applications of equipment's under different working condition</p>	<p>1. Demonstration of arrangement of equipment's and uses like safety Harness, helmet, gloves, eye glasses, earplugs, nose mask etc.</p>	<p>05</p>

		Total Duration	25
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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 data entry centre and observe the following: Location, Site, Office building, Computer Systems, Tools and Equipment, Printer, Scanner. During the visit, students should obtain the following information from the owner or the supervisor of the Data Centre:

1. Computer Infrastructure.
2. BSNL exchange.
3. Assistive technology.
4. PGCIL exchange.
5. RAILTEL exchange.
6. Local exchange of communication partners.

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. Hot knife with blade attachment and stand
2. Professional Fiber Cutter
3. Micro-Strip fiber stripper
4. Fiber optic crimping tool
5. Fiber optic inspection microscope
6. Vial of index-matching gel
7. Fiber optic splice
8. 2-meter fiber cable with ST® connectors on both ends (one assembled in
9. Previous activity.)
10. Fiber Optic Demonstration System (plastic or glass model)

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

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

S. No.	Qualification	Minimum Competencies	Age Limit
1	Graduate in Engineering in Telecommunication. with minimum 65% marks from a recognized university/institution with 2 years' experience in teaching or work experience in telecommunication OR Master's degree in telecommunication from a recognized university/ institution with minimum 65% marks and 1 year experience in teaching or work/ teaching experience in telecommunication	<ul style="list-style-type: none"> • Effective communication skills (oral and written) • Basic computing skills 	18-40 years (as on Jan. 01 (year)) Age relaxation to be provided as per Govt. rules

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

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

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

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

OR

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

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

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

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

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

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

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

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

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

- (i) Prepare session plans and deliver sessions which have a clear and relevant purpose and which engage the students;
- (ii) Deliver education and training activities to students, based on the curriculum to achieve the learning outcomes;
- (iii) Make effective use of learning aids and ICT tools during the classroom sessions;
- (iv) Engage students in learning activities, which include a mix of different methodologies, such as project based work, team work, practical and simulation based learning experiences;
- (v) Work with the institution's management to organise skill demonstrations, site visits, on-job trainings, and presentations for students in cooperation with industry, enterprises and other workplaces;
- (vi) Identify the weaknesses of students and assist them in up gradation 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 up gradation of knowledge and skills related to the vocational pedagogy, communication skills and vocational subject;
5. Membership of professional society at District, State, Regional, National and International level;
6. Development of teaching-learning materials in the subject area;
7. Efforts made in developing linkages with the Industry/Establishments;
8. Efforts made towards involving the local community in Vocational Education
9. Publication of papers in National and International Journals;
10. Organisation of activities for promotion of vocational subjects;
11. Involvement in placement of students/student support services.

9. LIST OF CONTRIBUTORS

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