

LEARNING OUTCOME BASED VOCATIONAL CURRICULUM

**Job Role: Brick Mason
Qualification Pack Ref. Id. : CON/Q0113**

**SECTOR: CONSTRUCTION
Grades XI and XII**



**PSS CENTRALINSTITUTE OF VOCATIONAL EDUCATION
Shyamla Hills, Bhopal-462 002, 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.K. Gandhi

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Construction- Brick Mason**

March, 2023

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FOREWORD

The Pandit Sundarlal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent of the National Council of Educational Research and Training (NCERT) is spearheading the efforts of developing learning outcome-based curricula and courseware aimed at integrating both vocational and general education to open pathways of career progression for students. The curriculum has been developed for the vocational education programme introduced under the Centrally Sponsored Scheme of *Samagra Shiksha* of the *Ministry of Education (erstwhile, Ministry of Human Resource Development)* and is aligned to the National Skill Qualifications Framework (NSQF). The curricula for vocational courses are being developed under the project approved by the Project Approval Board (PAB) of '*Samagra Shiksha*', which is an overarching programme for the school education sector extending from pre-school to Grade 12.

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

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

DINESH PRASAD SAKLANI
Director
National Council of Education Research and Training

PREFACE

India today stands poised at a very exciting juncture in its saga. The potential for achieving inclusive growth is immense and the possibilities are equally exciting. The world is looking at us to deliver sustainable growth and progress. To meet the growing expectations, India will largely depend upon its young workforce. In order to fulfil the growing aspirations of our youth and the demand for a skilled human resource, the Ministry of Education (erstwhile, Ministry of Human Resource Development (MHRD), Government of India introduced the revised Centrally Sponsored Scheme of Vocationalisation of School Education that aims to provide for the diversification of educational opportunities so as to enhance individual employability, reduce the mismatch between demand and supply of skilled manpower and provide an alternative for those pursuing higher education. For spearheading the scheme, the PSS Central Institute of Vocational Education (PSSCIVE) was entrusted with the responsibility to develop learning outcome-based curricula, student textbooks and e-learning material for job roles in various sectors.

The PSSCIVE firmly believes that the vocationalisation of education in the nation needs to be established on a strong footing of philosophical, cultural and sociological traditions and it should aptly address the needs and aspirations of the students besides meeting the skill demands of the industry. The curriculum, therefore, aims at developing the desired professional, managerial and communication skills to fulfil the needs of society and the world of work. In order to honor its commitment to the nation, the PSSCIVE is developing learning outcome-based curricula with the involvement of faculty members and leading experts in the field. It is being done through the concerted efforts of leading academicians, professionals, policymakers, partner institutions, Vocational Education and Training (VET) experts, industry representatives, and teachers. The expert group, through a series of consultations, working group meetings and use of reference materials develops a National curriculum. We extend our gratitude to all the contributors for selflessly sharing their precious knowledge, acclaimed expertise, and valuable time and positively responding to our request for development of curriculum.

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

DEEPAK PALIWAL
Joint Director
PSS Central Institute of Vocational Education

ACKNOWLEDGEMENTS

On behalf of the team at the PSS Central Institute of Vocational Education (PSSCIVE) we are grateful to the members of the Project Approval Board (PAB) of *Samagra Shiksha* and the officials of the Ministry of Education (MoE), Government of India for the financial support to the project for development of learning outcome-based curricula.

We are grateful to the Director, National Council of Educational Research and Training (NCERT) for his support and guidance. We also acknowledge the contributions of our colleagues at the NCERT, National Council for Vocational Education and Training (NCVET), National Skill Development Corporation (NSDC) and Construction Skill Development Council (CSDC) for their academic support and cooperation in the development of Qualification file and curriculum.

We are grateful to Prof. Saurabh Prakash, Course Coordinator for his untiring efforts and contribution to the development of this learning outcome-based curriculum. The contribution made by Mr. Avinash Kumar Singh (Consultant), along with Mr. Akhilesh Kashiv, Computer Operator Grade III in typing and composing of the material is duly acknowledged.

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1. COURSE OVERVIEW

COURSE TITLE: Construction-Brick Mason

At Construction site Brick Mason worker performs the basic operations related to construction of a building. He identifies and demonstrate safe use of hand and power tools/equipment used in construction. He Construct masonry structures using brick / bloc,execute plaster on internal & external surfaces of masonry and RCC structure, carry outwaterproofing works for structures using cementitious materials etc. Construction site workersprovide customers all the information available with them to help customers to select andcare for building.

COURSE OBJECTIVES: 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 andabilities;
- Demonstrate the knowledge of the importance of green skills in meeting thechallenges of sustainable development and environment protection;
- Identify and control hazards in the workplace that pose a danger or threat to theirsafety or health, or that of others.
- Identify and demonstrate safe use of hand and power tools/equipment used in construction;
- Gain insight into Brick Mason job role and its career progression
- Construct masonry structures using brick / bloc
- Execute plaster on internal & external surfaces of masonry and RCC structure
- Carry out waterproofing works for structures using cementitious materials
- Build structures using random rubble masonry
- Carry out IPS / Tremix flooring
- Work effectively in a team to deliver results at a construction site
- Plan and organize work to meet expected outcomes
- Work according to personal health, safety and environment protocol atconstruction site

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

COURSE LEVEL: This is a course for class XI and XII. On completion of this course, a student can take up a higher-level course in the area of Construction sector.

COURSE DURATION: 600 hrs

Grade 11 : 300 hrs

Grade 12 : 300 hrs

Total : 600 hrs

2. SCHEME OF UNITS

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

CLASS 11			
	Units	No. of Hours for Theory and Practical 300	Max. Marks for Theory and Practical 100
Part A	Employability Skills		
	Unit 1: Communication Skills-III	25	10
	Unit 2: Self-management Skills –III	25	
	Unit 3: Information and Communication Technology Skills-III	20	
	Unit 4: Entrepreneurial Skills-III	25	
	Unit 5: Green Skills-III	15	
	Total	110	10
Part B	Vocational Skills		
	Unit 1: Masonry Work	60	40
	Unit 2: Plastering work	60	
	Unit 3: Waterproofing work	45	
	Total	165	40
Part C	Practical Work		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	Total	10	35
Part D	Project Work/Field Visit		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
	Total	15	15
	Grand Total	300	100

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

CLASS 12			
Units		No. of Hours for Theory and Practical 300	Max. Marks for Theory and Practical 100
Part A	Employability Skills		
	Unit 1: Communication Skills-IV	20	10
	Unit 2: Self-management Skills-IV	10	
	Unit 3: Information and Communication Technology Skills-IV	20	
	Unit 4: Entrepreneurial Skills-IV	15	
	Unit 5: Green Skills-IV	10	
	Total	75	10
Part B	Vocational Skills		
	Unit 1: Random rubble masonry	60	40
	Unit 2: IPS / Tremix flooring	70	
	Unit 3: Environment Health and Safety	35	
	Total	165	40
Part C	Practical Work		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
	Total	10	35
Part D	Project Work/Field Visit		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
	Total	15	15
	Grand Total	300	100

3. TEACHING/TRAINING ACTIVITIES

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

CLASSROOM ACTIVITIES\

Classroom activities are an integral part of this course and interactive lecture sessions, followed by discussions should be conducted by trained vocational teachers. Vocational teachers should make effective use of a variety of instructional aides, 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, 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

	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 the meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information)	2	3	2	14
3.	Application – (Use abstract information in a 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 differentiate between different pieces of information; Organize and/ or integrate unique pieces of information from a variety of sources)	0	2	0	04
5.	Evaluation – (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	0	1	0	02
	Total	5x1=5	10x2=20	5x3=15	40

SKILL ASSESSMENT (PRACTICAL)

Assessment of skills should be done by the assessors/examiners on the basis of practical demonstration of skills by students, 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 effective training in assessment principles and practices. The Sector Skill Councils should ensure that the assessors are provided with training on the assessment of competencies.

A practical examination allows students to demonstrate that they have the knowledge and understanding of performing a task. This will include a 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 practical skills on a certain time period or timeline. Project work should be given on the basis of the capability of the individual to perform the tasks or activities involved in the project. Projects should be discussed in the class and the teacher should periodically monitor the progress of the project and provide feedback for improvement and innovation. Field visits should be organized as part of the project work. Field visits can be followed by 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 a practical file or student portfolio.

Student Portfolio is a compilation of documents that supports the students' claim of competence. Documents may include reports, articles, and 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.

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

5. UNIT CONTENTS

GRADE XI

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 SKILLS – III			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Duration (25 hrs)
1. Demonstrate the knowledge of communication	2. Introduction to the communication process 3. Importance of communication 4. Elements of communication. 5. Perspectives in communication Effective communication	1. Role-play on the communication process. 2. Group discussion on the importance of communication and factors affecting perspectives in communication. 3. Charts preparation on elements of communication. 4. Classroom discussion on the 7Cs (i.e. Clear, Concise, Concrete, Correct, Coherent, Courteous and Complete) for effective communication.	03
2. Demonstrate verbal communication	1. Verbal communication 2. Public Speaking	1. Role-play of a phone conversation. 2. Group activity on delivering a speech and practicing public speaking.	02

3. Demonstrate non-verbal communication	<ol style="list-style-type: none"> 1. Importance of non-verbal communication 2. Types of non-verbal communication 3. Visual communication 	<ol style="list-style-type: none"> 1. Role-play on non-verbal communication. 2. Group exercise and discussion on Do's and Don'ts to avoid body language mistakes. 3. Group activity on methods of communication. 	02
4. Demonstrate speech using correct pronunciation	<ol style="list-style-type: none"> 1. Pronunciation basics 2. Speaking properly 3. Phonetics 4. Types of sounds 	<ol style="list-style-type: none"> 1. Group activities on practicing pronunciation. 	01
5. Apply an assertive communication style	<ol style="list-style-type: none"> 1. Important communication styles 2. Assertive communication 3. Advantages of assertive communication 4. Practicing assertive communication 	<ol style="list-style-type: none"> 1. Group discussion on communication styles 2. Group discussion on observing and sharing communication styles 	03
6. Demonstrate the knowledge of saying no	<ol style="list-style-type: none"> 1. Steps for saying 'No' 2. Connecting words 	<ol style="list-style-type: none"> 1. Group discussion on how to say 'No' 	02
7. Identify and use parts of speech in writing	<ol style="list-style-type: none"> 1. Capitalisation 2. Punctuation 3. Basic parts of speech 4. Supporting parts of speech 	<ol style="list-style-type: none"> 1. Group activity on identifying parts of speech 2. Writing a paragraph with punctuation marks 3. Group activity on constructing sentences 4. Group activity on identifying parts of speech. 	03
8. Write correct sentences and paragraphs	<ol style="list-style-type: none"> 1. Parts of a sentence 2. Types of object 3. Types of sentences 4. Paragraph 	<ol style="list-style-type: none"> 1. Activity on framing sentences 2. Activity on active and passive voice 3. Assignment on writing different types of sentences 	02

9. Communicate with people	1. Greetings 2. Introducing self and others	1. Role-play on formal and informal greetings 2. Role-play on introducing someone 3. Practice and group discussion on how to greet different people.	02
10. Introduce yourself to others and write about oneself	1. Talking about self 2. Filling a form	1. Practicing self-introduction and filling up forms 2. Practicing self-introduction to others	01
11. Develop questioning skill	1. Main types of questions 2. Forming closed and open-ended questions	1. Practice exercise on forming questions 2. Group activity on framing questions	01
12. Communicate information about family to others	1. Names of relatives 2. Relations	1. Practice talking about family 2. Role-play on talking about family members.	01
13. Describe habits and routines	1. Concept of habits and routines	1. Group discussion on habits and routines 2. Group activity on describing routines	01
14. Ask or give directions to others	1. Asking for directions 2. Using landmarks	1. Role-play on asking and giving directions 2. Identifying symbols used for giving directions	01
Total			25

UNIT 2: SELF-MANAGEMENT-III			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Duration (25 hrs)
1. Identify and analyse own strengths and weaknesses	1. Understanding self 2. Techniques for identifying strengths and weaknesses 3. Difference between interests and abilities	1. Activity on writing aims in life. 2. Preparing a worksheet on interests and abilities.	03
2. Demonstrate personal grooming skills	1. Guidelines for dressing and	1. Role-play on dressing and	

	grooming 2. Preparing a personal grooming checklist	grooming standards. 2. Self-reflection activity on various aspects of personal grooming.	04
3. Maintaining personal hygiene	1. Importance of personal hygiene 2. Three steps to personal hygiene 3. Essential steps of hand washing	1. Role-play on personal hygiene. 2. Assignment on personal hygiene.	03
4. Demonstrate the knowledge of working in a team and participating in group activities	1. Describe the benefits of teamwork 2. Working in a team	1. Assignment on working in a team. 2. Self-reflection on teamwork.	03
5. Develop networking skills	1. Benefits of networking skills 2. Steps to build networking skills	1. Group activity on networking in action. 2. Assignment on networking skills.	03
6. Describe the meaning and importance of self-motivation	1. Meaning of self-motivation 2. Types of motivation 3. Steps to building self-motivation	1. Activity on staying motivated 2. Assignment on reasons hindering motivation	03
7. Set goals	1. Meaning of goals and purpose of goal-setting 2. Setting SMART goals	1. Assignment on setting SMART goals 2. Activity on developing long-term and short-term goals using SMART method	03
8. Apply time management strategies and techniques	1. Meaning and importance of time management 2. Steps for effective time management	1. Preparing a checklist of daily activities	03
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 the word processor	<ol style="list-style-type: none"> 1. Introduction to ICT 2. Advantages of using a word processor 3. Work with Libre Office Writer 	<ol style="list-style-type: none"> 1. Demonstration and practice of the following: <ul style="list-style-type: none"> • Creating a new document • Typing text • Saving the text • Opening and saving a file on Microsoft Word/Libre Office Writer. 	02
2. Identify icons on the toolbar	<ol style="list-style-type: none"> 1. Status bar 2. Menu bar 3. Icons on the Menu bar 4. Multiple ways to perform a function 	<ol style="list-style-type: none"> 1. Group activity on using basic user interface of LibreOffice writer. 2. Group activity on working with Microsoft Word. 	02
3. Save, close, open and print document	<ol style="list-style-type: none"> 1. Save a word document 2. Close a word document 3. Open an existing document 4. Print 	<ol style="list-style-type: none"> 1. Group activity on performing the functions for saving, closing and printing documents in LibreOffice Writer. 2. Group activity on performing the functions for saving, closing and printing documents in Microsoft Word. 	02
4. Format text in a word document	<ol style="list-style-type: none"> 1. Change style and size of text 2. Align text 3. Cut, Copy, and Paste 4. Find and replace 	<ol style="list-style-type: none"> 1. Group activity on formatting text in LibreOffice Writer. 2. Group activity on formatting text in Microsoft Word. 	02
5. Check spelling and grammar in a word document	<ol style="list-style-type: none"> 1. Use of spell checker 2. Auto correct 	<ol style="list-style-type: none"> 1. Group activity on checking spellings and grammar using LibreOffice Writer. 2. Group activity on checking spellings and grammar using Microsoft Word. 	02

6. Insert lists, tables, pictures, and shapes in a word document	<ol style="list-style-type: none"> 1. Insert bullet list 2. Number list 3. Tables 4. Pictures 5. Shapes 	1. Practical exercise of inserting lists and tables using LibreOffice Writer.	03
7. Insert header, footer and page number in a word document	<ol style="list-style-type: none"> 1. Insert header 2. Insert footer 3. Insert page number 5. Page count 	<ol style="list-style-type: none"> 1. Practical exercise of inserting header, footer and page numbers in LibreOffice Writer. 2. Practical exercise of inserting header, footer and page numbers in Microsoft Word. 	03
8. Make changes by using the track change option in a word document	<ol style="list-style-type: none"> 1. Tracking option 2. Manage option <p>Compare documents</p>	<ol style="list-style-type: none"> 1. Group activity on performing track changes in LibreOffice Writer. 2. Group activity on performing track changes in Microsoft Word. 	04
Total			20

UNIT 4: ENTREPRENEURIAL SKILLS – III			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Duration (25 hrs)
1. Differentiate between different kinds of businesses	1. Introduction to entrepreneurship 2. Types of business activities	1. Role-play on different kinds of businesses around us	03
2. Describe the significance of entrepreneurial values	1. Meaning of value 2. Values of an Entrepreneur 3. Case study on qualities of an entrepreneur	1. Role-play on qualities of an entrepreneur	03
3. Demonstrate the attitudinal changes required to become an entrepreneur	1. Difference between the attitude of entrepreneur and employee	1. Interviewing employees and entrepreneurs	03
4. Develop thinking skills like an entrepreneur	1. Problems of entrepreneurs 2. Problem-solving 3. Ways to think like an entrepreneur	1. Group activity on identifying and solving problems	04
5. Generate business ideas	1. The business cycle 2. Principles of idea creation 3. Generating a business idea 4. Case studies	1. Brainstorming on generating a business ideas	04
6. Describe customer needs and the importance of conducting a customer survey	1. Understanding customer needs 2. Conducting a customer survey	1. Group activity to conduct a customer survey	04
7. Create a business plan	1. Importance of business planning 2. Preparing a business plan 3. Principles to follow for growing a business 4. Case studies	1. Group activity on developing a business plan	04
Total			25

UNIT 5: GREEN SKILLS – III			
Learning Outcome	Theory (07 hrs)	Practical (08 hrs)	Duration (15 hrs)
1. Describe the importance of the main sector of the green economy	1. Meaning of ecosystem, food chain and sustainable development 2. Main sectors of the green economy- E-waste management, green transportation, renewal energy, green construction, and water management	1. Group discussion on sectors of green economy 2. Poster making on various sectors for promoting green economy	06
2. Describe the main recommendations of policies for the green economy	1. Policies for a green economy	1. Group discussion on initiatives for promoting the green economy 2. Writing an essay or a short note on the important initiatives for promoting green economy.	03
3. Describe the major green sectors/ areas and the role of various stakeholders in the green economy	1. Stakeholders in the green economy	1. Group discussion on the role of stakeholders in the green economy 2. Making solar bulbs.	03
4. Identify the role of government and private agencies in the green economy	1. Role of the government in promoting a green economy 2. Role of private agencies in promoting green economy	1. Group discussion on the role of Government and Private Agencies in promoting a green economy. 2. Poster making on green sectors.	03
Total			15

Part B: Vocational Skills

S. No.	Units	Duration(Hrs.)
1.	Masonry Work	60
2.	Plastering work	60
3.	Waterproofing work	45
	Total	165

Unit – 1 : Masonry Work			
Learning Outcome	Theory (20Hrs)	Practical (40Hrs)	Duration (60Hrs)
1. Describe Role of Brick Mason	<ol style="list-style-type: none"> Roles and responsibilities of brick mason. Personal attributes of the brick mason Career development options of a brick mason. 	<ol style="list-style-type: none"> Draw a chart of career progression of brick mason. 	5
2. Draw the sketches of brick work / paver block	<ol style="list-style-type: none"> Basic principles of measurement, simple arithmetic's and conversion of units of measurement Importance of sketches for brick/paver block Reading and interpretation of method statements, formats, permits, protocols, checklists for works 	<ol style="list-style-type: none"> Reading and interpreting the sketches/basic working drawing for brick/block 	10
3. Identify the various tools used in masonry work	<ol style="list-style-type: none"> Standard specification of all masonry tools and equipment, their care and maintenance How to select and use tools such as measuring tape, trowels, floats, brushes, screed boards, straight edge, concrete mixer, mortar boards and stands, shovels, wheelbarrows, hawks, joint rules, mason's square 	<ol style="list-style-type: none"> Identification of tools used in masonry work Draw sketches of the tools Perform a check of level using various levelling instruments. 	05

	buckets, power leads, spade, volume box, water measuring jug etc. for masonry works		
4. Carryout vertical and horizontal alignment of masonry work	<ol style="list-style-type: none"> 1. Basic levelling instruments like spirit level and water levelling, its setting and use 2. Determining vertical and horizontal alignment using thread line, spirit level, plum bob etc. 	<ol style="list-style-type: none"> 1. Visit the construction site and check the levelling and alignment using thread line, spirit level and plumb bob. 	05
5. Identify the various types of construction materials	<ol style="list-style-type: none"> 1. Type of raw material like cement, sand, aggregate, bricks/ blocks; the size and physical attributes of bricks/blocks 	<ol style="list-style-type: none"> 1. Identify the raw material and do the measurement 	05
6. Appreciate the importance of water cement ratio	<ol style="list-style-type: none"> 1. Knowledge of cement mix proportion and its importance 		05
7. Demonstrate the laying of brick/paver block	<ol style="list-style-type: none"> 1. Basic knowledge of water cement ratio 	<ol style="list-style-type: none"> 1. Visit the site and see the consistency of water cement ratio at different water contents. 	05
8. Calculate the quantity for masonry work	<ol style="list-style-type: none"> 1. Importance of quantity of masonry work 2. Standard sizes of masonry materials quantity 	<ol style="list-style-type: none"> 1. Visit to market for survey of materials used in masonry work 	05
9. Prepare a bond used in brick work	<ol style="list-style-type: none"> 1. Knowledge of English, Flemish, stretcher and header bond 2. Process of laying and fixing brick/blocks in position with uniform joints 3. Various adhesives used in brick/block work 	<ol style="list-style-type: none"> 1. Prepare a English bond with and without mortar 2. Prepare a Flemish bond with and without mortar 3. Prepare a Stretcher bond with and without 4. Prepare a header bond with and without 	05

<p>1. Practice basic masonry activity</p>	<ol style="list-style-type: none"> 1. Method of layout and marking for brick/blockwork 2. Vertical and horizontal alignment using thread line, spirit level, plum bob etc. 3. 3-4-5 method for squaring corners 4. Method of carrying out checks for preparatory works like surface preparation 5. Techniques for cutting, chiselling of bricks as per closure using appropriate tools 	<ol style="list-style-type: none"> 1. Performing visual checks for brick/block, cement, aggregate 2. Estimate the quantity of material required for work. 3. Demonstrate the breaking of bricks to required size and shape. 4. Build brick/block wall as per standards tolerance as per relevant drawing. 5. Demonstrate checks for maintaining line and level of each course of brick/block wall 6. Demonstrate setting out of 90° corners using builders square or 3-4-5 method 7. Demonstrate preparation of lime/cement mortar 8. for pointing as per specification 	<p>05</p>
<p>11. Construct the staircase and arches</p>	<ol style="list-style-type: none"> 1. Marking and layout of tread and risers for staircase 2. Laying and fixing of bricks in staircase 3. Different components of arch and its terminology 4. Laying and fixing bricks in arches providing key stones and levelling and aligning appropriately 5. Importance of providing proper joint spacing and gauging in arches 	<ol style="list-style-type: none"> 1. Demonstrate raking and cleaning of joints as specified prior to drying of bonding mortar 2. Demonstrate set out of tread and riser for staircase 3. Demonstrate building of staircase maintaining bond, alignment and plumb. 4. Demonstrate building of arches, cutting creepers around corners and filling of joints for arches. 	<p>05</p>

<p>12. Carryout the block activity</p>	<ol style="list-style-type: none"> 1. Various techniques for repairing and finishing in brick/block work 2. Process of pointing in brickwork <ul style="list-style-type: none"> • Flush pointing • Keyed/groove pointing 3. Recessed pointing Struck pointing 4. Different mortar mix used for pointing 5. Various tools used for pointing and raking 6. Various method of curing of masonry structure 	<ol style="list-style-type: none"> 1. Demonstrate filling of joints with mortar to obtain specified type of pointing using appropriate tools. 2. Demonstrate building of manhole as per required drawing as per specification 3. Demonstrate fixing of paver blocks 4. Demonstrate installations and fixing of arch elements for building arches. 5. Demonstrate removal of deteriorated elements from masonry works using appropriate tools. 6. Demonstrate reinstallation of bricks to match adjacent surfaces. Demonstrate proper filling and raking of repaired work and its bonding and matching with adjacent surfaces. 	<p>05</p>
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Unit 2: Plastering work			
Learning Outcome	Theor y (20Hrs)	Practic al (35Hrs)	Duration (55 Hrs)
1. Identify types of plastering in a building	<ol style="list-style-type: none"> 1. Importance of plastering 2. Types of plastering 	<ol style="list-style-type: none"> 1. Reading and interpreting the sketches/basic working drawing for plastering 	10
2. State the material used for plastering and tools required for plastering	<ol style="list-style-type: none"> 1. Material required for plastering 2. Various ratios of mix proportion used for plastering on internal and external surfaces 3. Calculation of quantity required for plastering 4. Tools required for plastering 	<ol style="list-style-type: none"> 1. Performing visual checks for sand, cement and surface to be plastered 2. Estimate the quantity of material required for work. 3. Checking and ensuring that the cement mortar mix to confirm to specified proportion 4. Selecting tools and performing checks to confirm their Workability. 	20
3. Demonstrate the plastering work	<ol style="list-style-type: none"> 1. Method of plastering for various types of surfaces 2. Process of carrying out layout marking and leveling for plastering works 3. Care and precautions to be made during plastering 	<ol style="list-style-type: none"> 1. Demonstrate the application of cement slurry and mortar for obtaining desired thickness of plaster using appropriate tools. 2. Demonstrate checks for vertical and horizontal alignment using appropriate tools of plastered surface. 3. Demonstrate setting out of 90° at corners is required. 4. Demonstrate maintaining slope/fall in case of floor plastering. 	25

Unit 3: Waterproofing works			
Learning Outcome	Theor y (20 Hrs)	Practic al (25Hrs)	Duration (45 Hrs)
1. State the different components of waterproofing works	<ol style="list-style-type: none"> 1. Waterproofing and its advantages 2. Drawings /sketches relevant to waterproofing works 2. Types of lines, projection and its type, dimensioning, 3. Drawing Sheet Layout 	<ol style="list-style-type: none"> 1. Reading and interpreting the sketches/basic working drawing for waterproofing works 2. Do drawings /sketches relevant to waterproofing works 3. Drawing of lines 4. Calculating area for waterproofing 	05
2. Identifying the tools required for waterproofing work	<ol style="list-style-type: none"> 1. Tools and equipment used for waterproofing works and their standard specifications. 2. Basic levelling tools used in masonry works 	<ol style="list-style-type: none"> 1. Identification of tools and equipment used for waterproofing works 2. Selecting tools and performing checks to confirm their workability 3. Handling of tools and equipment 	05
3. Do layout marking and levelling for waterproofing works	<ol style="list-style-type: none"> 1. Importance of process of carrying out layout marking and levelling for waterproofing works 2. Different material used for waterproofing and various ratios of mix proportion used for cement mortar mix for waterproofing works. 3. Process of performing various visual checks on materials and surface for waterproofing 4. Different type of defects presents on concrete surfaces such as caulking etc. 	<ol style="list-style-type: none"> 1. Identifying common defects in concrete surface prior to waterproofing 2. Identify the material used for waterproofing Calculate the various ratios of mix proportion used for cement mortar mix for waterproofing 3. Do the layout marking and leveling for waterproofing works 	10

<p>4. Preparation of the surface before water proofing</p>	<ol style="list-style-type: none"> 1. Surface preparation method prior to waterproofing such as prime coating 2. Filling holes or depressions by cementitious material 3. Procedure of washing down 4. Method of hacking of existing RCC surface 5. Technique of chipping /scraping of protrusions 6. Process of cleansing free of dust 7 Method of priming or sealing of surface 8. Process of removing sharp edge 	<ol style="list-style-type: none"> 1. Demonstrate preparation of surface prior to waterproofing works 2. Do filling holes or depressions by cementitious material 3. Performing visual checks for sand, cement, waterproofing material and surface to be waterproofed. 4. Demonstrate marking and transferring of required levels for maintaining slope in waterproofing works. 	<p>10</p>
<p>5. Demonstrate the waterproofing work</p>	<ol style="list-style-type: none"> 1. Various methods and techniques used to protect waterproofing of the surface from damage as per the site requirements 2. Different type of waterproofing works 3. Different type of waterproofing compounds used for waterproofing works 4. Procedure for laying out cementitious waterproofing course. 	<ol style="list-style-type: none"> 1. Checking of cement mortar mix to confirm to specified proportion. 2. Demonstrate application of waterproofing cementitious to the prepared surface using appropriate tools. 3. Performing visual checks for sand, cement, waterproofing material and surface to be waterproofed 	<p>10</p>

6. Checking of waterproofing work	<ol style="list-style-type: none"> 1. Procedure for checking water leakage in waterproofed surface 2. Procedure for carrying out horizontal and vertical alignment of waterproofed course 3. Procedure for transferring levels on floor for maintaining desired slope. 4. Procedure for carrying out brick bat coba waterproofing. 	<ol style="list-style-type: none"> 1. Identify leakages on the waterproofed surface 2. Demonstrate checks for vertical and horizontal alignment using appropriate tools of waterproofed surface. 3. Demonstrate marking and transferring of required levels for maintain slope in waterproofing works. 	10
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GRADE XII

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)	Duration (25 hrs)
1. Demonstrate active listening skills	<ol style="list-style-type: none"> 1. Active listening - listening skill, stages of active listening 2. Overcoming barriers to active listening 	<ol style="list-style-type: none"> 1. Group discussion on factors affecting active listening 2. Poster making on steps for active listening 3. Role-play on negative effects of not listening actively 	10
2. Identify the	1. Parts of speech –	1. Group practice	

parts of speech	using capitals, punctuation, basic parts of speech, Supporting parts of speech	on identifying parts of speech 2. Group practice on constructing sentences	10
3. Write sentences	<ol style="list-style-type: none"> 1. Writing skills to practice the following: <ul style="list-style-type: none"> • Simple sentence • Complex sentence • Types of object 2. Identify the types of sentences <ul style="list-style-type: none"> • Active and Passive sentences • Statement/ • Declarative sentence • Question/ • Interrogative sentence - Emotion/ Reaction or Exclamatory sentence - Order or Imperative sentence - Paragraph writing 	<ol style="list-style-type: none"> 1. Group activity on writing sentences and paragraphs 2. Group activity on practicing writing sentences in active or passive voice 3. Group activity on writing different types of sentences (i.e., declarative, exclamatory, interrogative and imperative) 	05
Total			25

UNIT 2: SELF-MANAGEMENT SKILLS – IV			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Duration (25 hrs)
1. Describe the various factors influencing motivation and positive attitude	<ol style="list-style-type: none"> Motivation and positive attitude Intrinsic and extrinsic motivation Positive attitude – ways to maintain positive attitude Stress and stress management - ways to manage stress 	<ol style="list-style-type: none"> Role-play on avoiding stressful situations Activity on listing negative situations and ways to turn it positive 	10
2. Describe how to become result oriented	<ol style="list-style-type: none"> How to become result oriented? Goal setting – examples of result-oriented goals 	<ol style="list-style-type: none"> Group activity on listing aim in life 	05
3. Describe the importance of self-awareness and the basic personality traits, types and disorders	<ol style="list-style-type: none"> Steps towards self-awareness Personality and basic personality traits Common personality disorders- <ul style="list-style-type: none"> Suspicious Emotional and impulsive Anxious Steps to overcome personality disorders 	<ol style="list-style-type: none"> Group discussion on self-awareness Group discussion on common personality disorders Brainstorming steps to overcome personality disorder 	10
Total			25

UNIT 3: INFORMATION AND COMMUNICATION TECHNOLOGY SKILLS – IV			
Learning Outcome	Theory (06 hrs)	Practical (14 hrs)	Duration (20 hrs)
1. Identify the components of a spreadsheet application	<ol style="list-style-type: none"> Getting started with spreadsheet - types of a spreadsheet, steps to start LibreOffice Calc., components of a worksheet. 	<ol style="list-style-type: none"> Group activity on identifying components of spreadsheet in LibreOffice Calc. 	02

<p>2. Perform basic operations in a spreadsheet</p>	<ol style="list-style-type: none"> 1. Opening workbook and entering data – types of data, steps to enter data, editing and deleting data in a cell 2. Selecting multiple cells 3. Saving the spreadsheet in various formats 4. Closing the spreadsheet 5. Opening the spreadsheet. 6. Printing the spreadsheet. 	<ol style="list-style-type: none"> 1. Group activity on working with data on LibreOffice Calc. 	<p>03</p>
<p>3. Demonstrate the knowledge of working with data and formatting text</p>	<ol style="list-style-type: none"> 1. Using a spreadsheet for addition – adding value directly, adding by using cell address, using a mouse to select values in a formula, using sum function, copying and moving formula 2. Need to format cell and content 3. Changing text style and font size 4. Align text in a cell 5. Highlight text 	<ol style="list-style-type: none"> 1. Group activity on formatting a spreadsheet in LibreOffice Calc 2. Group activity on performing basic calculations in LibreOffice Calc. 	<p>02</p>
<p>4. Demonstrate the knowledge of using advanced features in spreadsheet</p>	<ol style="list-style-type: none"> 1. Sorting data 2. Filtering data 3. Protecting spreadsheet with password 	<ol style="list-style-type: none"> 1. Group activity on sorting data in LibreOffice Calc 	<p>03</p>
<p>5. Make use of the software used for making slide presentations</p>	<ol style="list-style-type: none"> 1. Presentation software available 2. Steps to start LibreOffice Impress 3. Adding text to a presentation 	<ol style="list-style-type: none"> 1. Group practice on working with LibreOffice Impress tools 	<p>02</p>
<p>6. Demonstrate the knowledge to open, close and save slide presentations</p>	<ol style="list-style-type: none"> 1. Open, Close, Save and Print a slide presentation 	<ol style="list-style-type: none"> 1. Group activity on saving, closing and opening a presentation in LibreOffice Impress 	<p>01</p>
<p>7. Demonstrate the operations related to slides and texts in the presentation</p>	<ol style="list-style-type: none"> 1. Working with slides and text in a presentation- adding slides to a presentation, deleting slides, adding and 	<ol style="list-style-type: none"> 1. Group activity on working with font styles in LibreOffice Impress 	<p>04</p>

	formatting text, highlighting text, aligning text, changing text colour		
8. Demonstrate the use of advanced features in a presentation	<ol style="list-style-type: none"> 1. Advanced features used in a presentation 2. Inserting shapes in the presentation 3. Inserting clipart and images in a presentation 4. Changing slide layout 	1. Group activity on changing slide layout on LibreOffice Impress	03
Total			20

UNIT 4: ENTREPRENEURIAL SKILLS-IV			
Learning Outcome	Theory (10 hrs)	Practical (15 hrs)	Duration (25 hrs)
1. Describe the concept of entrepreneurship and the types and roles and functions entrepreneur	<ol style="list-style-type: none"> 1. Entrepreneurship and entrepreneur 2. Characteristics of entrepreneurship 3. Entrepreneurship-art and science 4. Qualities of a successful entrepreneur 5. Types of entrepreneurs 6. Roles and functions of an entrepreneur 7. What motivates an entrepreneur 8. Identifying opportunities and risk-taking 9. Startups 	<ol style="list-style-type: none"> 1. Group discussion on the topic "An entrepreneur is not born but created". 2. Conducting a classroom quiz on various aspects of entrepreneurship. 3. Chart preparation on types of entrepreneurs 4. Brainstorming activity on What motivates an entrepreneur 	10
2. Identify the barriers to entrepreneurship	<ol style="list-style-type: none"> 1. Barriers to entrepreneurship 2. Environmental barriers 3. No or faulty business plan 4. Personal barriers 	<ol style="list-style-type: none"> 1. Group discussion about "What we fear about entrepreneurship" 2. Activity on taking an interview of an entrepreneur. 	05
3. Identify the attitude that make an entrepreneur successful	<ol style="list-style-type: none"> 1. Entrepreneurial attitude 	<ol style="list-style-type: none"> 1. Group activity on identifying entrepreneurial attitude. 	05
4. Demonstrate the knowledge of entrepreneurial attitude and competencies	<ol style="list-style-type: none"> 1. Entrepreneurial competencies 2. Decisiveness 3. Initiative 4. Interpersonal skills- 	<ol style="list-style-type: none"> 1. Playing games, such as "Who am I". 2. Brainstorming a business ideas 3. Group practice on 	05

	<p>positive attitude, stress management</p> <p>5. Perseverance</p> <p>6. Organisational skills- time management, goal setting, efficiency, managing quality.</p>	<p>“Best out of Waste”</p> <p>4. Group discussion on the topic of “Let’s grow together”</p> <p>5. Group activity on listing stress and methods to deal with it like Yoga, deep breathing exercises, etc.</p> <p>6. Group activity on time management</p>	
Total			25

UNIT 5: GREEN SKILLS-IV			
Learning Outcome	Theory (05 hrs)	Practical (10 hrs)	Duration (15 hrs)
1. Identify the benefits of the green jobs	<p>1. Green jobs</p> <p>2. Benefits of green jobs</p> <p>3. Green jobs in different sectors:</p> <ul style="list-style-type: none"> • Agriculture • Transportation • Water conservation • Solar and wind energy • Eco-tourism • Building and construction • Solid waste management • Appropriate technology 	<p>1. Group discussion on the importance of green job.</p> <p>2. Chart preparation on green jobs in different sectors.</p>	08
3. State the importance of green jobs	<p>1. Importance of green jobs in</p> <ul style="list-style-type: none"> • Limiting greenhouse gas emissions • Minimizing waste and pollution • Protecting and restoring ecosystems • Adapting to the effects of climate change 	<p>1. Preparing posters on green jobs.</p> <p>2. Group activity on tree plantation.</p> <p>3. Brainstorming different ways of minimizing waste and pollution</p>	07
Total			15

Part B: Vocational Skills

S.No	Units	Duration
1	Unit 1: Random rubble masonry	60
2	Unit 2: IPS / Tremix and VD Flooring	70
3	Unit 3: Environment, Health and Safety	35
Total		165

Unit 1: Random rubble masonry			
Learning Outcome	Theory (30Hrs)	Practical (30Hrs)	Duration (60 Hrs)
1. Carry out preparatory work for Rubble Masonry	<ol style="list-style-type: none"> Tools and tackles for use in the rubble masonry Estimating amount of materials required to complete a rubble masonry job work preparation of sub-base Compaction method for base prior to commencement of work Selection of the particular type of surface finish as per the site requirements Method of preparation of the sides, edges, bed of stone to ensure proper bonding of stones Method of mixing mortar for rubble masonry in specified ratio including dry & wet mix 	<ol style="list-style-type: none"> Identification and selection of tools for use in the rubble masonry Calculate the amount of materials required to complete a rubble masonry job work Preparation of sub-base Compaction of base by using proper tools. Do the surface finishing as per the site requirements Making the sides, edges, bed of stone to ensure proper bonding of stones Mixing of mortar for rubble masonry in specified ratio including dry & wet mix 	10

	8. Identification of required levels using appropriate tools prior to rubble masonry work		
2. Identify the material required for random rubble masonry	<ol style="list-style-type: none"> 1. Materials required for random rubble masonry 2. Properties of cement, proportion of mortar and its workability 3. Stones and its quality for random rubble masonry 4. Method of soaking of stones prior to laying 	<ol style="list-style-type: none"> 1. Identify the material required for stone masonry 2. Preparation of cement mortar 3. Checking of the quality of stones used in random rubble masonry 4. Soaking of stones prior to laying 	10
3. Lay out coursed and un coursed Random Rubble Masonry with undressed or hammer dressed stones	<ol style="list-style-type: none"> 1. Importance of Undressed and hammer dressed stones 2. Laying method for stones to build wall of un-course random rubble or course random rubble 3. Importance of knocking off all projecting corners of the laid stones with joints filled and flushed as per the requirements of the site for the un-course random rubble masonry 4. Use large stones at the corners and at jambs to increase the strength as per the un-course random rubble masonry requirements 5. Method of curing of rubble masonry structure 	<ol style="list-style-type: none"> 1. Checking the stone masonry 2. Laying of stones to build wall of un-course random rubble or course random rubble 3. Knocking off all projecting corners of the laid stones with joints filled and flushed for the un-course random rubble masonry 4. Curing of rubble masonry structure 	10

<p>4. Carry out pointing in stone masonry</p>	<ol style="list-style-type: none"> 1. Importance of pointing, various types of pointing works as per specification using appropriate tools and technique 2. Method of raking of joints as specified prior to drying of bonding mortar 3. Importance of joints cleaning and wetting of surface prior to pointing 4. Method of preparation of lime/cement mortar for pointing 5. Importance of filling joints with appropriate mortar to obtain specified type of pointing 6. Need of curing of pointing brick 	<ol style="list-style-type: none"> 1. Identification of different types of brick 2. Demonstration of uses of tools and equipment used for dressing of bricks 3. Dressing of bricks 	<p>10</p>
<p>5. Lay out course of Dry Rubble Masonry</p>	<ol style="list-style-type: none"> 1. Use of lay and fix stones for construction of walls without use of mortar 2. Importance of knocking off all projecting corner 	<ol style="list-style-type: none"> 1. Laying of fixing stones for construction of walls without use of mortar 2. Practice of knocking off all projecting corner 	<p>10</p>
<p>6. Check for line, level and alignment</p>	<ol style="list-style-type: none"> 1. Importance of marking and transfer required levels at a regular interval in order to maintain proper slope of finished surface in case of horizontal surface 2. Horizontal and vertical alignment using appropriate tools. 	<ol style="list-style-type: none"> 1. Practice of marking levels at a regular interval 2. Checking of horizontal and vertical alignment using appropriate tools 	<p>10</p>

Unit 2: IPS / Tremix and Vacuum Dewatered Flooring			
Learning Outcome	Theory (30 Hrs)	Practical (40 Hrs)	Duration (70 Hrs)
1. Identify components of IPS/Tremix flooring	<ol style="list-style-type: none"> 1. Meaning of IPS/Tremix flooring 2. Purpose 3. Material used in construction of IPS/Tremix flooring 	<ol style="list-style-type: none"> 1. Identify the components of IPS/Tremix flooring 2. Draw the figure offlooring 	05
2. Identification of special tools for IPS/Tremix flooring	<ol style="list-style-type: none"> 1. Importance of masonry specialized tools for Tremix flooring such as <ul style="list-style-type: none"> • Vacuum de-watering Pump • Floater Machine • Double beam • Screen Vibrator 	<ol style="list-style-type: none"> 1. Identification of components and partsof <ul style="list-style-type: none"> • Vacuum de-watering Pump • Floater Machine • Double beam • Screen Vibrator 	05
3. Carry out preparatory work prior to IPS / Tremix flooring	<ol style="list-style-type: none"> 1. Importance of sub-base 2. Process of preparing the sub-base by wateringand ramming 3. Steps of checking of levelling, undulation, gaps, misalignment in formwork/reinforcemen tand ensure proper cover for reinforcement is provided 4. Method /process to preparing the sub-baseby watering and ramming 	<ol style="list-style-type: none"> 1. Inspecting the work area prior to concreting, ensure levelling in case of any undulations observed on the surface prior to concreting 2. Ensuring the surface is prepared appropriately and report any deviationin slope and alignment in PCC 3. Reporting any gaps in formwork to avoidleakage 4. Reporting any misalignment in formwork/reinforc ement and ensure proper cover for reinforcement is provided 	10
4. Check for line, leveland alignment	<ol style="list-style-type: none"> 1. Importance of slope inPCC (Plain Cement Concrete) in a base course 2. Reference levels and itsimportance 3. Method of marking reference levels and 	<ol style="list-style-type: none"> 1. Mark reference level on the wall and transfer this marking to all floorlocations using appropriates tools 2. Mark flooring thickness and 	10

	transfer the markings to all locations where flooring is to be done	provide dummy level dots at specified intervals for ensuring required slope	
5. Check the materials used for IPS / Tremix flooring in case of manual mixing	<ol style="list-style-type: none"> 1. Various type and grade of cement used 2. Water /cement ratio and type of aggregates 3. Different mix proportion/grade of concrete 4. Need of sequence of concrete pouring and placing 5. Manual mixing of concrete and nominal mix proportions 	<ol style="list-style-type: none"> 1. Checking the grade of cement prior to use in case of manual mixing 2. Sieving fine aggregate as per grade requirement 3. Checking concrete mixed in appropriate proportion 	10
6. Checking the materials used for IPS/Tremix flooring in case of machine mixing	<ol style="list-style-type: none"> 1. Machine mixing of concrete and nominal mix proportions 	<ol style="list-style-type: none"> 1. Visually assess the concrete mix for usability and workability 2. Notify superiors for detrimental quality of concrete 3. Ensure specified concrete mix is used at allocated location 4. Check that panels prepared are of specified size and type. 	10
7. Carry out IPS Flooring work	<ol style="list-style-type: none"> 1. Meaning of IPS Flooring, use and advantages 2. Method and advantages of covering to reinforcement with respect to size of reinforcement 	<ol style="list-style-type: none"> 1. Fixing the glass, aluminium or brass strip in cement mortar with their tops at appropriate level and according to slope 	

	<ol style="list-style-type: none"> 3. Method of pouring of concrete in alternate panels 4. How to avoid shrinkage cracks in concrete 5. Various admixtures used in concreting. 6. Different types of vibrators, their influence area and use. 7. Contraction and expansion joints. 8. Cutting tools for providing joints. 9. Importance of final troweling process before the concrete is hardened 	<ol style="list-style-type: none"> 2. Fix the panels made as per specified size 3. Practice of pouring concrete in alternate panels/specified panels as per requirement. 4. Removing practice of excess cement slurry and any marks on the surface. Levelling the concrete surface with a straight edge and to the required finish with a wooden float / trowel 6. Spreading cement punning over the IPS concrete for smooth finish surface and allow it to soak into the concrete, as per requirement 7. Setting construction joints and expansion joints as per requirement 8. Pouring concrete to the specified levels to maintaining required. 	<p>10</p>
<p>8. Carry out Tremix / IPS</p>	<ol style="list-style-type: none"> 1. Removal of excess water process using Vacuum dewatered machine 2. Importance of screed vibrator and its use 	<ol style="list-style-type: none"> 1. Level the surface and lay stone soling / boulder soling layer 2. Lay the floor with slope maintained in PCC work above the stone soling 	

	<ol style="list-style-type: none"> 3. Role of hardener usage along with floater machine at the time of finishing the floor surface to increase abrasion resistance of the floor 4. How to provide for space for narrow passage for operating float vibrator along a wall 	<ol style="list-style-type: none"> 3. Remove excess water from the top layer of wet concrete without removing cement of sand particles through vacuum de-watering machines 4. Ensure floater work within green concrete surface 5. Carry out Tremix flooring in specified panel on RCC floors ensuring intactness of rebar and cover 6. Cut grooves on concrete at specified intervals for construction joints provide expansion joints as per requirement 7. carry out curing of finished concrete as per specifications 9. Ensure finished levels have required slope knowledge. 	05
<p>8. Describe VDF (Vacuum Dewatered Flooring) along with the tools used for it.</p>	<ol style="list-style-type: none"> 1. Meaning and purpose of VDF 2. Standards practices of VDF 3. Tools used in VDF 	<ol style="list-style-type: none"> 1. Enlist the tools used in Vacuum dewatered flooring. 2. Visit the site where the process of Flooring is being carried out. 	02
<p>9. Explain the laying procedure of VDF flooring along with its constituents.</p>	<ol style="list-style-type: none"> 1. Process of preparation of subgrade for VDF flooring. 	<ol style="list-style-type: none"> 1. Demonstrate the checks to be carried out for inspection of area prior to concreting. 	

	<ol style="list-style-type: none"> 2. Different mix proportions/grades of concrete for VDF flooring 3. Sequence and procedure concrete curing and placing in specific panels with the provision of cover for reinforcement w.r.t size of reinforcement. 4. Process of water removal using vacuum dewatering machine. 	<ol style="list-style-type: none"> 2. Demonstrate the checks for assessing the quality of material used in manual and machine mixing of mortar for VDF flooring works. 	03
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Unit 3: Environment Health and Safety			
Learning Outcome	Theory (20 hrs)	Practical (15 hrs)	Duration (35 Hrs)
1. Explain the risks of hazards with the safety measures adopted at the site	<ol style="list-style-type: none"> 1. Types and identification of hazards including fire hazards at the construction site. 2. Safety control measure and actions to be taken at the time of emergency. 	<ol style="list-style-type: none"> 1. Demonstrate the operating procedure of fire extinguishers. 2. Demonstrate the use of PPEs as per the work requirement. 	10
2. Describe the role of manpower for safety at the site	<ol style="list-style-type: none"> 1. Importance of participation of workers in safety drills. 2. Reporting procedure to the concerned authority in case of emergency situations. 	<ol style="list-style-type: none"> 1. Demonstrate the procedure to report to the concerned authority regarding the outbreak/hazard of any infectious disease/pandemic. 	05
3. Explain the procedure of handling, storing and stacking of materials at the site.	<ol style="list-style-type: none"> 1. Different types of tools accessories and equipment needed at the construction site. 2. Handling, storing and stacking of the tools, materials and accessories. 	<ol style="list-style-type: none"> 1. Demonstrate the methods to clean and disinfect all the materials, tools and supplies before and after use. 	10
4. Explain the disposal method of the waste generated at the construction site.	<ol style="list-style-type: none"> 1. Different types of waste generated at the construction site 2. Disposal methods of waste generated 	<ol style="list-style-type: none"> 1. Demonstrate safe waste disposal practices followed at the construction site. 	05
5. Describe various types of health safety measures taken at the construction site	<ol style="list-style-type: none"> 1. Basic medical tests required for working at construction site. 2. Purpose and Importance 	<ol style="list-style-type: none"> 1. Demonstrate the practices to maintain personal hygiene, workplace hygiene and 	05

	<p>of vertigo test</p> <p>3. Different types of infectious disease that can spread/originate at the construction site.</p> <p>2. Methods to check the spread of infectious disease.</p> <p>3. Symptoms and cure of various infectious diseases.</p>	<p>site/workplace sanitization.</p>	
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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 construction site and observe the following: Location, Site, construction site, Office building, newly constructed site, building store, construction site. During the visit, students should obtain the following information from the owner or the supervisor of the construction site:

1. Construction activity being taken
2. Residential/Commercial project
3. Technology adopted
4. Type of material used
5. Manpower engaged
6. Total expenditure of project
7. Total annual income

7. LIST OF EQUIPMENTS 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. Bricks
2. Stone
3. Sand
4. Concrete block
5. Cement
6. Water
7. Trowel
8. Plumb rule and Bob
9. Spirit level
10. Square
11. Line and pins
12. Bolster

13. Brick hammer
14. Scutch
15. Pick Axe
16. Chisel
17. Mash Hammer
18. Boaster
19. Spall Hammer
20. Scrabbling Hammer
21. Bevel
22. Spade
23. Picks and Beaters
24. Wooden Float
25. Metal Float
26. Floating Rule
27. Racking Needle
28. Hacking tool
29. Scratcher
30. Spade
31. Trowel (Khurpi)

8. VOCATIONAL TEACHER'S AND TRAINERS QUALIFICATION AND GUIDELINES

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

S.No.	Qualification	Minimum Competencies	Age Limit
1.	B. Tech in Civil Engineering from a recognized Institute /University, with at least 1-year work / teaching experience Or Diploma in Civil engineering with 2-year work / teaching experience Or B.Voc in Construction sector with at least 1 year work / teaching experience.	<ul style="list-style-type: none"> • Effective communication skills (oral and written) • Basic computing skills. 	18-37 years (as on Jan. 01 (year)) Age relaxation to be provided as per Govt. rules.

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 Samagra Shiksha 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 organizations 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.

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 organize 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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