

Selection Process: The selection process would comprise of two stages viz., (a) Skill test
(b) Written test.

(a) *Skill test:* The skill test in the Carpentry trade will be the stage-1 of the selection process. In this stage, the applicant is expected to demonstrate his/her skill in Carpentry. At the onset, the applicants will be given a tour of the setups for carpentry and they will be allowed some time for exploring the setup. After having thus been exposed to the setups, he/she will be provided with specific tasks to be completed and the applicant is required to demonstrate the technical competence in Carpentry. Those qualifying in Skill test alone will be eligible for the second stage of selection process. This skill test is purely qualifying in nature and will not carry any weightage in the subsequent selection process.

(b) *Written test:* The applicants qualifying in the skill test will be eligible for the written test. In the written test 20% of the marks will be for general aptitude, arithmetic skills and English. Remaining 80% marks will be in the work related topics. The final selection will be based on the performance of the candidates in this written test.

Syllabus: The syllabus for the skill test and written tests for the Carpentry trade will be based on syllabus of the curriculum of “The Craftsmen Training Scheme (CTS)”, Central Staff Training and Research Institute, Directorate General of Training, Ministry of Skill Development and Entrepreneurship.

The detailed syllabus for this trade is provided in the subsequent pages.



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

CARPENTER

(Duration: One Year)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 4



SECTOR –CONSTRUCTION



Directorate General of Training

CARPENTER

(Engineering Trade)

(Revised in 2019)

Version: 1.2

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL - 4

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City,

Kolkata – 700 091

www.cstaricalcutta.gov.in

CONTENTS

SNo.	Topics	Page No.
1.	Course Information	1
2.	Training System	2
3.	Job Role	6
4.	General Information	7
5.	Learning Outcome	10
6.	Assessment Criteria	12
7.	Trade Syllabus	17
	Annexure I(List of Trade Tools & Equipment)	34
	Annexure - II (List of Trade experts)	39

1. COURSE INFORMATION

During one-year duration of “Carpenter” trade, a candidate is trained on Professional Skill, Professional Knowledge and Employability Skill related to job role. In addition to this, a candidate is entrusted to undertake project work, extracurricular activities and on-the-job training to build up confidence. The broad components covered under Professional skill subject are as below: -

The trainee learns about elementary first aid, firefighting, environment regulation and housekeeping etc. The trainee identifies timber/ wood, apply measuring, marking and testing instrument and other holding and supporting hand tools. He will be able to use various saws and portable power saw machines for Ripping, cross cutting, Oblique sawing and curve cutting etc. He will be able to analyze the surface finish with exact sizing by planning operation and apply various shaving tools or portable power planing machine. The trainee can apply various paring tools and analyze and choose the positioning and employ holding device for chiselling with better finish. He will be able to identify and classify various types of joints, analyze and prepare correct joint at correct position, related with strength and appearance. He will be able to make small wooden job as per drawing with schedule sizes of timber or alternatives of timber i.e. FRP, MDF, FOAM using various hardware, analyze and use various carving tools and convert a wooden block/ piece into a decorative article. The trainee will be able to preserve wooden item through surface finishing with various processes such as painting, polishing, varnishing etc.

The trainee learns ripping, cross cutting, curve cutting etc. on band saw/ circular saw machine and grinding and setting of blade/ cutter. He can perform different operations on planing machine along with sharpening blades. (Range of operations – Surfacing, thickening, chamfering, edge bending etc.). The trainee can work on pedestal grinder (Range of operations – grinding of mushroom head, cutting edge of tools, drills, etc.). He can make holes of different sizes in correct location on woodwork, can perform different operations on wood turning lathe along with sharpening of cutting tools. The trainee can do different operations on Tenon and mortise machine, Sanding machine. He will be able to prepare different types of pattern, core box, core print etc. for moulding application with proper allowances and colour codes. Can produce component involving different operations of fitting and sheet metal work and check for functionality. The trainee will be able to prepare various roof truss, door and windows frame and shutters, assembling & fixing (wooden/ aluminium or PVC), Paint various door, windows frame, stair and furniture (wooden or aluminium), Prepare various type of wooden floor, partition wall etc. He will be able to check, identify, analyze and repair the wooden job.

The trainee also undergoes two weeks project work at the end of year which gives them more practical exposure and helps to build up confidence level.

2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer programmes of DGT for strengthening vocational training.

Carpenter trade under CTS is one of the popular courses delivered nationwide through a network of ITIs. The course is of one-year duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) impart professional skills and knowledge, while Core area (Employability Skills) impart requisite core skill, knowledge and life skills. After passing out of the training programme, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Trainees broadly need to demonstrate that they are able to:

- Read and interpret technical parameters/ documentation, plan and organize work processes, identify necessary materials and tools.
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations.
- Apply professional knowledge & employability skills while performing the job and modification & maintenance work.
- Check the system specification and application software as per requirement of the design of job.
- Document the technical parameter related to the task undertaken.

2.2 PROGRESSION PATHWAYS

- Can join industry as Technician and will progress further as Senior Technician, Supervisor and can rise to the level of Manager.
- Can become Entrepreneur in the related field.
- Can join Apprenticeship programme in different types of industries leading to National Apprenticeship Certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.
- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

2.3 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one year: -

S No.	Course Element	Notional Training Hours
1	Professional Skill (Trade Practical)	1000
2	Professional Knowledge (Trade Theory)	280
3	Workshop Calculation & Science	80
4	Engineering Drawing	80
5	Employability Skills	160
	Total	1600

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

a) The **Continuous Assessment** (Internal) during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain individual *trainee portfolio* as detailed in assessment guideline. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The final assessment will be in the form of summative assessment. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. The pattern and marking structure are being notified by DGT from time to time. **The learning outcome and assessment criteria will be basis for setting question papers for final assessment. The examiner during final examination will also check** individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one-year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%. There will be no Grace marks.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/wastage as per procedure, behavioral attitude, sensitivity to environment and regularity in training. The sensitivity towards OSH and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based, comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examination body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
(a) Weightage in the range of 60 -75% to be allotted during assessment	
For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices.	<ul style="list-style-type: none"> • Demonstration of good skill in the use of hand tools, machine tools and workshop equipment. • Below 70% accuracy achieved while undertaking different work with those demanded by the component/job. • A fairly good level of neatness and consistency in the finish. • Occasional support in completing the project/job.
(b) Weightage in the range of 75% - 90% to be allotted during assessment	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance,	<ul style="list-style-type: none"> • Good skill levels in the use of hand tools, machine tools and workshop equipment.

<p>and regard for safety procedures and practices.</p>	<ul style="list-style-type: none"> • 70-80% accuracy achieved while undertaking different work with those demanded by the component/job. • A good level of neatness and consistency in the finish. • Little support in completing the project/job.
<p>(c) Weightage in the range of above 90% to be allotted during assessment</p>	
<p>For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.</p>	<ul style="list-style-type: none"> • High skill levels in the use of hand tools, machine tools and workshop equipment. • Above 80% accuracy achieved while undertaking different work with those demanded by the component/job. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

Carpenter, General; makes, assembles, alters and repairs wooden structures and articles according to sample or drawing using hand or power tools or both. Studies drawing on sample to understand type of structure or article to be made and calculates quantity of timber required. Selects timber to suit requirements. Marks them to size using square, scribe etc. Saws, chisels and planes wooden pieces to required sizes and makes necessary joints such as half lap, Tenonmortise, dovetail etc. using saws, planes, mortising, chisels, drills and other carpentry hand or power tools as required. Checks parts frequently with square, foot rule, measuring tape etc. to ensure correctness. Assembles parts and secures them in position by screwing, nailing or doweling. Checks assembled structure with drawing or sample; rectifies defects, if any, and finishes it to required specifications. Alters, repairs or replaces components in case of old structures or articles in similar manner. May glue parts together. May smoothen and finish surface with sandpaper and polish. May fix metal fittings to structure and polish. May fix metal fittings to structure or article made. May calculate cost of furniture. May sharpen his own tools.

Carpenter, Construction; Carpenter, Construction; Carpenter Building makes, assembles, alters and repairs doors, windows, frames and other wooden fixtures of building using hand or power tools or both. Studies drawings or samples and calculates quantity of timber required. Saws oversize pieces by power or hand tools or collects lumbers for making various components. Plans two sides of above pieces, marks off dimensions using tri-square, scribe, pencil etc., and reduces them to required sizes by adzing, sawing and planning. Marks off different members cuts them as required and shapes and makes Tenon and mortise, half lap and other joints by sawing, chiselling, drilling and filling. Checks pieces frequently while sizing and shaping to ensure correctness. Assembles framework step by step by gluing, cramping, dowelling, nailing and screwing as required. Examines finished article for accuracy. Fits metal rods, hinges etc., to wood work where necessary and rectifies defects in fittings if any. Sharpens his own tools. May erect scaffoldings if necessary.

Plan and organize assigned work and detect & resolve issues during execution in his own work area within defined limit. Demonstrate possible solutions and agree tasks within the team. Communicate with required clarity and understand technical English. Sensitive to environment, self-learning and productivity.

Reference NCO-2015:

- (i) 7115.0100–Carpenter, General
- (ii) 7115.0200–Carpenter, Construction

4. GENERAL INFORMATION

Name of the Trade	CARPENTER
Trade Code	DGT/1022
NCO - 2015	7115.0100, 7115.0200
NSQF Level	Level-4
Duration of Craftsmen Training	One year (1600 Hours)
Entry Qualification	Passed 8 th class examination
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD, CP, LC, DW, AA, DEAF, HH, AUTISM, ID, SLD
Unit Strength (No. Of Student)	24(There is no separate provision of supernumerary seats)
Space Norms	120 Sq. m
Power Norms	8 KW
Instructors Qualification for	
1. Carpenter Trade	<p>B.Voc/Degree in Civil/ Mechanical Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma in Civil/ Mechanical Engineering from AICTE/ recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/NAC passed in the trade of "Carpenter" with three years' experience in the relevant field.</p> <p>Essential Qualification: Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.</p> <p>NOTE: - Out of two Instructors required for the unit of 2(1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications. However, both of them must possess NCIC in any of its variants.</p>

<p>2. Workshop Calculation & Science</p>	<p>B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma in Engineering from AICTE/ recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC in any one of the engineering trades with three years' experience.</p> <p><u>Essential Qualification:</u> National Craft Instructor Certificate (NCIC) in relevant trade</p> <p style="text-align: center;">OR</p> <p>NCIC in RoDA or any of its variants under DGT</p>
<p>3. Engineering Drawing</p>	<p>B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma in Engineering from AICTE/ recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC in any one of the Engineering trades with three years' experience.</p> <p><u>Essential Qualification:</u> National Craft Instructor Certificate (NCIC) in relevant trade</p> <p style="text-align: center;">OR</p> <p>NCIC in RoDA / D'man (Mech /civil) or any of its variants under DGT.</p>
<p>4. Employability Skill</p>	<p>MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability Skills from DGT institutes.</p> <p>(Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above)</p> <p style="text-align: center;">OR</p> <p>Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills from DGT institutes.</p>

5. Minimum Age for Instructor		21 Years			
List of Tools and Equipment		As per Annexure – I			
Distribution of training on Hourly basis: (Indicative only)					
Total Hours/Week	Trade Practical	Trade Theory	Workshop Cal. &Sc.	Engg. Drawing	Employability Skills
40 Hours	25 Hours	7 Hours	2 Hours	2 Hours	4 Hours

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

5.1 LEARNING OUTCOME (TRADE SPECIFIC)

1. Identify timber/wood, apply measuring, marking and testing instrument and other holding and supporting hand Tools following safety precautions.
2. Identify and apply various saws and portable power saw machines for Ripping, cross cutting, oblique sawing and curve cutting etc.
3. Analyze the surface finish with exact sizing by planning, operation, identifying and applying various shaving tools or portable power planning machine.
4. Identify and apply various paring tools, analyze and choose the positioning and employ holding device for chiselling with better finish.
5. Identify and classify various types of joints, analyze and prepare correct joint at correct position, related with strength and appearance.
6. Make small wooden job as per drawing with schedule sizes of timber or alternatives of timber i.e. FRP, MDF, FOAM using various hardware.
7. Analyze and identify various carving tools and convert a wooden block/ piece into a decorative article.
8. Demonstrate preservation of wooden item through surface finishing with various processes such as painting, polishing, varnishing etc.
9. Demonstrate ripping, cross cutting, curve cutting etc. on band saw/ circular saw machine and grinding and setting of blade/ cutter.
10. Demonstrate different operations on Jointer/surface Planer/Thickness planer machine along with sharpening blades. (Range of operations – Surfacing, thickening, chamfering, edge bending etc.)
11. Demonstrate working on pedestal grinding (Range of operations – grinding of mushroom head, cutting edge of tools, drills, etc.)
12. Demonstrate working on pedestal /portable drilling machine, use of different types of drill bits, make holes of different sizes in correct location on woodwork.
13. Demonstrate different operations on wood turning lathe along with sharpening of cutting tools.
14. Demonstrate different operations on Tenon and mortise machine.
15. Demonstrate different operations on Sanding machine.
16. Identify and prepare different types of pattern, core box, core print etc. for moulding application with proper allowances and colour codes.
17. Produce component involving different operations of fitting work and check for functionality.

18. Produce component involving different operations of sheet metal work and check for functionality.
19. Prepare various roof truss, door and windows frame and shutters, assembling & fixing (wooden/ aluminium or PVC).
20. Paint various door, windows frame, stair and furniture (wooden or aluminium).
21. Prepare various type of wooden floor, partition wall etc.
22. Check, identify, analyze and repair the wooden job.

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Identify timber/ wood & apply measuring, marking and testing instrument and holding & supporting hand Tools following safety precautions.	Demonstrate workshop safety & discipline.
	Identify different types of wood/ timber.
	Identify the measuring, marking, work holding and testing instrument.
	Mark as per drawing and measure dimensions for checking.
	Demonstrate use of testing instrument and other useable hand tools.
2. Identify and apply various saws and portable power saw machines for Ripping, cross cutting, Oblique sawing and curve cutting etc.	Select material and inspect visually for defects.
	Mark the job as per drawing and check measurements before sawing.
	Mark an angle with the aid of bevel square and mitre square for oblique sawing.
	Identify and arrange the required tools for desired operations and make the job.
	Perform Ripping/cross, cutting/curve, sawing/ cutting operations according to the marking following safety norms.
	Check for dimensional accuracy.
	Avoid waste and plan for reuse/ dispose of the unused items.
3. Analyze the surface finish with exact sizing by planning operation identify and apply various shaving tools or portable power planning machine.	Select material and appropriate planner for required surface finish and size.
	Set planner with sharpened cutting iron and perform required planning operation to obtain required size and finish.
	Plane across the grain and end grain.
	Check the size, flatness, squareness and finish of the job as per drawing.
	Demonstrate removal, sharpening and fitting of planner blade observing standard operating procedures.
4. Identify and apply various paring tools and analyze and choose the positioning and employ holding device for chiselling with better finish.	Arrange woods with vertical/ horizontal grains and required type of chisel for performing operation (chiselling across the grain)as per drawing.
	Mark the work as per dimension of the drawing.
	Perform chiselling as per drawing and ensure better finish.

	Check the finished job as per drawing.
5. Identify and classify various types of joints, analyze and prepare correct joint at correct position, related with strength and appearance.	<p>Choose exact type of joint to employ and arrange materials, tools and equipments to perform the operation.</p> <p>Perform framing joint (Sawing and chiselling) as required maintaining dimensions.</p> <p>Assemble different parts and check for correctness, strength and finishing.</p>
6. Make small wooden job as per drawing with schedule sizes of timber or alternatives of timber i.e. FRP, MDF, FOAM using various hardware.	<p>Arrange required material, tools etc. to make the job as per drawing.</p> <p>Mark as per drawing.</p> <p>Perform sawing, chiselling of different parts, prepare all the parts as per marking layout and check dimension.</p> <p>Assemble different parts to make a complete job.</p> <p>Overall finish and check dimensions as per drawing.</p> <p>Avoid waste and plan for reuse/ dispose of the unused materials.</p>
7. Analyze and identify various carving tools and convert a wooden block/ piece into a decorative article.	<p>Plan for wood carving as per drawing and arrange for material and tools for the purpose.</p> <p>Mark layout as per drawing.</p> <p>Perform wood carving operation to make a piece of wood as per drawing.</p> <p>Check for corrections as per drawing.</p> <p>Finish the product by smoothing.</p>
8. Demonstrate preservation of wooden item through surface finishing with various processes such as painting, polishing, varnishing etc.	<p>Plan for finish the surface of wooden product as per requirement and arrange required items and tools.</p> <p>Clean/ prepare surface for the purpose.</p> <p>Smoothen surface applying proper procedure.</p> <p>Apply varnish/ polish on the surface to get required finish.</p> <p>Check the quality of finish.</p>
9. Demonstrate ripping, cross cutting, curve cutting etc.	Plan and select the job and set up machine accessories at position to perform desired operation.

	<p>Check the saw or blade and cutter guard.</p> <p>Set the job and perform desired operation with proper adjustment of table, guide, fence and blade guard.</p> <p>Check the product shape, size and dimensions with the drawing.</p> <p>Sharpen cutter or saw teeth and set teeth of saw.</p>
10. Demonstrate different operations on Jointer/ surface Planer/ Thickness planer machine along with sharpening blades. (Range of operations – Surfacing, thickening, chamfering, edge bending etc.)	<p>Plan and set the job and machine for surfacing and thickening operation.</p> <p>Adjust the table, fence and blade guard as per the width and thickness of the job.</p> <p>Perform desired operation and check the correctness as per drawing.</p>
11. Demonstrate working on pedestal grinding (Range of operations – grinding of mushroom head, cutting edge of tools, drills, etc.)	<p>Plan for offhand grinding with required safety norms.</p> <p>Perform grinding operation to make required shape, size and dimension.</p> <p>Check the work for its dimensional accuracy and cutting efficiency.</p>
12. Demonstrate working on pedestal/potable drilling machine, use of different types of drill bits; make holes of different sizes in correct location on woodwork.	<p>Plan and select material and machine for drill holes to make observing safety points.</p> <p>Mark the job as per drawing.</p> <p>Set the job and cutting tool properly.</p> <p>Perform operation to make drill holes as per drawing.</p> <p>Check dimensions for correctness.</p>
13. Demonstrate different operations on wood turning lathe along with sharpening of cutting tools.	<p>Plan and set the machine for desired turning operation.</p> <p>Hold the job between centres or in other work holding devices.</p> <p>Hold the tool and adjust tool rest</p> <p>Perform required turning operation observing standard operating procedure.</p> <p>Check dimensions and finish as per drawing.</p>
14. Demonstrate different operations on Tenon and mortise machine.	<p>Plan and set the Mortise machine for mortising operation and check sharpness of the tool.</p> <p>Mark the mortise on the job, select and set the chisel on the machine.</p>

	<p>Hold the job and adjust the table as per the depth and bench of mortise.</p> <p>Make the mortise to the required size and check the job for correctness.</p> <p>Plan and set the Tenoning machine for tenoning operation.</p> <p>Mark the tenon on the job for tenon cutting.</p> <p>Set the job on the tenoning machine and cut the hunched portion.</p> <p>Check the job for correctness.</p>
15. Demonstrate different operations on Sanding machine.	<p>Plan to perform and set the sanding machine for sanding operation.</p> <p>Perform sanding operation.</p> <p>Check the job for correctness.</p>
16. Identify and prepare different types of pattern, core box, core print etc. for moulding application with proper allowances and colour codes.	<p>Study the drawing and make a plan for making desired pattern.</p> <p>Select proper material and tool for making the pattern.</p> <p>Prepare layout for the pattern.</p> <p>Make the material as per layout considering contraction scale, drafting and machining allowances and check the dimensions.</p> <p>Perform removing material and make the pattern as per drawing.</p> <p>Check for accuracy of the pattern.</p>
17. Produce component involving different operations of fitting work and check for functionality.	<p>Study the drawing/ sketch and plan for the required steps of operation to produce the item.</p> <p>Arrange required materials, tools and machineries for smooth performance of the operations.</p> <p>Mark the job as per drawing.</p> <p>Perform required operation to prepare the job as per drawing.</p> <p>Check the dimensions of the product and its functionality.</p>
18. Produce component involving different operations of sheet metal work and check for functionality.	<p>Study the drawing/ sketch and plan for the required steps of operation to produce the item.</p> <p>Arrange required materials, tools and machineries for smooth performance of the operations.</p> <p>Develop and mark metal sheet to make the desired component as per drawing.</p> <p>Perform required operations to prepare the job as per drawing.</p> <p>Check the dimensions of the product and its functionality.</p>
19. Prepare various roof truss, door and windows frame	<p>Study the drawing/ sketch and plan for the required steps of operation to produce the item.</p> <p>Arrange required materials, tools and machineries for smooth</p>

and shutters, assembling & fixing (wooden/ aluminium or PVC).	performance of the operations.
	Mark the job and perform required operation to prepare the item as per drawing.
	Assemble the components to make a complete item.
	Check the dimensions of the product and its functionality.
20. Paint various door, windows frame, stair and furniture (wooden or aluminium).	Plan and arrange materials and tools for painting wooden surface.
	Remove old paint and/ or clean, smoothen and prepare the surface to be painted.
	Prepare correct solution of primer/ paint.
	Apply primer/ paint on the surface with correct procedure.
	Check finishing of the work.
21. Prepare various type of wooden floor, partition wall etc.	Study the drawing/ sketch and plan for the required steps of operation to produce the item.
	Arrange required materials, tools and machineries for smooth performance of the operations.
	Mark the job and perform required operation to prepare the item as per drawing.
	Assemble the components to make a complete item.
	Check the dimensions of the product and its functionality.
22. Check, identify, analyze and repair the wooden job.	Check the wooden/ Aluminium/PVC or like item and identify the repair/ reconditioning work to be done.
	Plan for the repair/ reconditioning work and arrange required materials, tools and machineries for smooth performance of the work.
	Perform the repair/ reconditioning work.
	Check the item for its workability/ acceptability.

SYLLABUS FOR CARPENTER TRADE			
DURATION: ONE YEAR			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical) With Indicative Hours	Professional Knowledge (Trade Theory)
Professional Skill 50Hrs; Professional Knowledge 14 Hrs	Identify timber/ wood, apply measuring, marking and testing instrument and holding & supporting hand Tools following safety precautions.	<ol style="list-style-type: none"> 1. Demonstrate first aid, fire safety equipment, different types of fire extinguisher and their application. (10hrs.) 2. Identification of different wooden sample piece i.e. - soft wood & hard wood, wooden grains etc. & their applications. (04hrs.) 3. Identification of wooden sample piece (Annual ring, knots, shakes & chicks etc.). (03hrs.) 4. Demonstrate use of hand operated tools and showing different audio-visual clips. (08 hrs.) 	<ul style="list-style-type: none"> • Introduction of carpentry trade. • General discipline, workshop discipline & Housekeeping. • Safety precaution in the workshop and industrial safety. • Importance of P.P.E, Types of PPE and their application. • Introduction of timber, growth of timber trees, cross-section of exogenous tree trunk, types of tree, different part of a tree, Soft & hard wood, their differences.(07 hrs)
		<ol style="list-style-type: none"> 5. Identification and use of different types of the measuring, marking and testing tools & their applications. (10hrs.) 6. Identification and use of different types of work holding devices. (06hrs.) 7. Demonstrate use of machinery and hand operated portable tools and their safety. (09 hrs.) 	<ul style="list-style-type: none"> • Common Indian timbers. • Defects in timber, diseases of timber, knots, shakes, grains etc. • Introduction of carpentry hand tools, classification and uses of marking, work holding devices. • Measuring & testing tools. (07 hrs)
Professional	Identify and apply	8. Demonstrate the use of	• Type of bench vice and their

<p>Skill 25 Hrs; Professional Knowledge 07 Hrs</p>	<p>various saws and portable power saw machines for Ripping, cross cutting, Oblique sawing and curve cutting etc.</p>	<p>bench vice, bench hook, bench stop& their application. (02 hrs.)</p> <p>9. Demonstrate different types of saws- ripping, cross cutting, curve cutting, oblique sawing. (06 hrs.)</p> <p>10. Use and practice Portable power circular saw. (04hrs.)</p> <p>11. Sharpen and set different type saw blade. (05 hrs.)</p> <p>12. Demonstrate the use of country drill, hand drill, ratchet brace, Breast drill and hand augers & bits. (04hrs.)</p> <p>13. Demonstrate the use of portable electrical drill machine. (02hrs.)</p> <p>14. Demonstrate the Auger application. (02hrs.)</p>	<p>uses.</p> <ul style="list-style-type: none"> • Introduction of different saw and their uses. • Introduction of power circular saw and its use. • Type of special saw and its uses i.e. -compass saw, coping saw, bow saw, fret saw. • Saw sharpening and sharpening tools. • Description of boring tools - Types, Parts, functions, size and application. • Description of portable electrical drill machine. • Drill bits, types, sizes etc. • Hand augers description, sizes of augers, application of hand augers. <p>(07 hrs)</p>
<p>Professional Skill 25 Hrs; Professional Knowledge 07 Hrs</p>	<p>Analyze the surface finish with exact sizing by planning operation, identifying and applying various shaving tools or portable power planning machine.</p>	<p>15. Planning face, face edge. (04 hrs.)</p> <p>16. Demonstrate the use of marking, mortise gauge etc. (04 hrs.)</p> <p>17. Test the accuracy of flatness and twistness of the surface by using try square. (04hrs.)</p> <p>18. Demonstrate the use of winding strips, cross planning, edge planning. (04hrs.)</p> <p>19. Grinding and Sharpening process of the planer blade/cutter. (05 hrs.)</p> <p>20. Demonstration of portable power planer machine and its function. (04 hrs.)</p>	<ul style="list-style-type: none"> • Type of different planes and their proper uses in woodwork - Description, function and its size, setting, knowledge of sharpening and uses etc. • Knowledge of using marking gauges. • Important instruments necessary for checking flatness and twistness of surface. • Sharpening and grinding angle of cutter. • Portable power planer - useful in modern woodwork and new technology design.

			(07 hrs)
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Identify and apply various paring tools and analyze and choose the positioning and employ holding device for chiselling with better finish.	<p>21. Demonstrate the use of different types of chisel, chiselling, chiselling along & across the grain. (08hrs.)</p> <p>22. Grind/ sharpen and honing of a chisel. (08hrs.)</p> <p>23. Demonstrate use of different types of striking tool, hammer and mallets. (04hrs.)</p> <p>24. Demonstrate the use of clamps 'G' or 'C', saw sharpening vice, carpentry vice etc. (05hrs.)</p>	<ul style="list-style-type: none"> • Different type chisels - Definition, identification, their uses. • Necessity of grinding and sharpening. • Striking tools- Definition, types, application. • Files - Types, uses • Care & maintenance of files • Function of work bench, bench vice, bench hook, etc. (07 hrs)
Professional Skill 100Hrs; Professional Knowledge 28Hrs	Identify and classify various types of joints, analyze and prepare correct joint at correct position, related with strength and appearance.	<p><u>Demonstration and making framing joint</u></p> <p>25. Single Mortise and tenon Joint. (04hrs.)</p> <p>26. Double tenon & mortise joint. (04hrs.)</p> <p>27. Plain hunched tenon and mortise joint. (04 hrs.)</p> <p>28. Mitre corner tenon & mortise joint. (04hrs.)</p> <p>29. Task tenon mortise joint. (04 hrs.)</p> <p>30. Bare faced tenon joint. (05hrs.)</p>	<ul style="list-style-type: none"> • Seasoning of timber - Definition, advantage and disadvantage of seasoning. • Moisture content in timber and its effect on timber. • Characteristics of wood, physical and mechanical properties of wood. • Quality of good timber. • Define the classification of wooden joint. • Description of different types joint. • Uses of joint: Framing joint angle joint and lengthening joint etc. (07 hrs)
		<p><u>Demonstration and making Housing joints</u></p> <p>31. Full housing joint. (03 hrs.)</p> <p>32. Bridle joint etc. (03hrs.)</p> <p>33. Stopped housing joint. (04 hrs.)</p> <p>34. Dovetail housing joint. (03 hrs.)</p>	<ul style="list-style-type: none"> • Preservation of timber. • Application of different types of preservation & Process of each treatment. • Definition of housing joint. • Different type of housing joint.

		<p><u>Demonstration and making dovetail joint</u></p> <p>35. Single dovetail joint. (03 hrs.)</p> <p>36. Common dovetail joint. (03 hrs.)</p> <p>37. Lapped dovetail joint. (03 hrs.)</p> <p>38. Secret mitre dovetail joint uses of dovetail template. (03 hrs.)</p>	<ul style="list-style-type: none"> • Uses of housing joint. • Description of different dovetail joint and their function. • Uses of dovetail joint. • Glues - Types of glue and their uses. (07 hrs)
		<p><u>Demonstration and Making broadening joints</u></p> <p>39. Simple butt joint by hard wood (100 mm width and 15mm thick). (02 hrs.)</p> <p>40. Riveted butt joint on hard wood (100mm width and 25mm thick). (04 hrs.)</p> <p>41. Pocket screw butt joint on hard wood (100mm width and 15mm thick). (03 hrs.)</p> <p>42. Secret pocket screw butt joint on teak wood or hard wood (100mm width and 100mm thick). (06 hrs.)</p> <p>43. Glued butt joint with dowel by a hard wood (100mm width and 15mm thick). (04 hrs.)</p> <p>44. Tongue and groove joint on hard wood (100mm width and 15mm thick). (06 hrs.)</p>	<ul style="list-style-type: none"> • Broadening joint description. • Types of broadening joint. • Application of broadening joint. • Setting of end side according to annual Rings as well as matching the grain stranding. • Advantage of adhesives use and their types. • Method of Dowel application. (07 hrs)
		<p><u>Making lengthening joint</u></p> <p>45. End half lap joint on hard wood (50mm X 50mm). (02hrs.)</p> <p>46. End over lap joint by hard wood 150mm X 25mm. (01</p>	<ul style="list-style-type: none"> • Lengthening joint description. • Types of lengthening joint. • Application of different lengthening joint. • Setting of two taper

		<p>hr)</p> <p>47. End bends lap joint on hard wood (50mm X25mm). (02 hrs.)</p> <p>48. Table scrat joint on hard wood (50mm X 50m). (03 hrs.)</p> <p>49. Too then end table & scarf joint on hard wood (50mm X 50m). (04 hrs.)</p> <p>50. Bend scarf joint on teak wood or hard wood (50mm X 50m). (03 hrs.)</p> <p><u>Making of Frame using different type of joints –</u></p> <p>51. Stopped Tenon & mortise Joint on hard wood to make tea table frame to lock four legs, top rail and bottom rails. (04 hrs.)</p> <p>52. Lapped half lap dovetail joint on bottom rails on hard wood. (03 hrs.)</p> <p>53. Tongue & Groove joint on tabletop by hard wood as a broadening joint. (03 hrs.)</p>	<p>wedges.</p> <ul style="list-style-type: none"> • Advantages of table & scarf joint. • Veneer, Plywood • Types of plywood • Advantage of plywood • Application of plywood, block board, laminated board, hard board, insulation board, mica etc. (07 hrs)
<p>Professional Skill 125 Hrs; Professional Knowledge 35Hrs</p>	<p>Make small wooden job as per drawing with schedule sizes of timber or alternatives of timber i.e. FRP, MDF, FOAM using various hardware.</p>	<p><u>Make small wall bracket –</u></p> <p>54. Make joint on hard wood to make small frame. (03hrs.)</p> <p>55. Stopped Tenon & Mortise joint on hard wood in the frame to set the selves. (02hrs.)</p> <p>56. Make selves by six pieces of hard wood with single lapped half lap dovetail joint with frame (two nos. of selves). (05 hrs.)</p> <p>57. Four sides of chalk box.</p>	<ul style="list-style-type: none"> • Parts & terms of portable disc sander. • Application of portable disc sander. • Care & maintenance of disc sander. • Method of making a wooden partition. • Door frames. • Door & window panels. (07 hrs)

		<p>(100mm X 120mm X 100mm) locked with hard wood by common dovetail joint (3 pin). (05 hrs.)</p> <p>58. Grooves on three sides. (02 hrs.)</p> <p>59. Make the lid & base with Masonite with handle levelled with top. (02 hrs.)</p> <p>60. Common dovetail joint apply to lock four sides of tray (400mm X 300mm X 200mm). (04 hrs.)</p> <p>61. Bases made with ply wood (5mm thick) and make the handle. (02 hrs.)</p>	
		<p>62. Layout of stool and make cutting List for mass production. (05hrs.)</p> <p>63. Prepare standard height tapper legged stool as per layout. (05hrs.)</p> <p>64. Demonstrate application of adhesive. (05 hrs.)</p> <p>65. Layout making for notice board or display board by hard board, plywood and insulation board. (05 hrs.)</p> <p>66. Making a small rack by layout with hard wood and plywood. (05 hrs.)</p>	<ul style="list-style-type: none"> • Calculation of timber required for stool. • List out the sequence of operation of the job. • Timbers used in furniture work – describe Sal, teak, gamar, pine, deodar etc. • Properties and characteristics of different furniture wood. (07 hrs)
		<p>67. Make Frame structure with the block board, layout as per the size and cutting by portable circular saw machine with Common dovetail joint used in the structure. (12 hrs.)</p> <p>68. Painting and polishing or</p>	<ul style="list-style-type: none"> • Conversion and types of conversion. • Parallel sawing Radial sawing Quarter sawing Tangential sawing Process and advantage • Design of wooden wall unit

		<p>fixing sun mica with adhesive. (08 hrs.)</p> <p>69. Setting glasses and hard works as on required location. (05 hrs.)</p>	<p>uses in bed room, dining hall, library, office, workshop classroom. (07 hrs)</p>
		<p>70. Make a small table use of lock, hinges, hasp and staple etc. making a small box with sun mica top. (Mortise and tenon joint. 'T' half tap dovetail joint. Secret dovetail joint). (20 hrs.)</p> <p>71. Uses sun mica and pest on the top of table. (05 hrs.)</p>	<ul style="list-style-type: none"> • Uses of joint for small table to stronger strength. • Manufacturing process of various boards and sheets. • Types of hinges, Uses of hinges • Types of door lock & their different uses. (07 hrs)
		<p><u>Demonstration on nailing screwing on job</u></p> <p>72. Use selected nail for the table and small box. (12 hrs.)</p> <p>73. Use selected screw for the table and small box. (08 hrs.)</p> <p>74. Application of different types of Nails, screws etc. (05 hrs.)</p>	<p>Nails and screws –</p> <ul style="list-style-type: none"> • Nail and screws – type, Uses etc. • Nut, bolts and washer - types and Uses • Lock hinges hasp and staple. • Knowledge of other fittings – types, sizes and lenses. (07 hrs)
<p>Professional Skill 25 Hrs;</p> <p>Professional Knowledge 07 Hrs</p>	<p>Analyze and identify various carving tools and convert a wooden block/ piece into a decorative article.</p>	<p>75. Demonstrate wood carving using carving tools, sharpen carving tools and finish by smoothing. (25 hrs.)</p>	<ul style="list-style-type: none"> • Description of different carving tools. • Tools required for ornamental carving. • Properties of wood. • Preparation a bill of materials. • Estimate the material. (07 hrs)
<p>Professional Skill 50 Hrs;</p> <p>Professional Knowledge 14 Hrs</p>	<p>Demonstrate preservation of wooden item through surface finishing with various processes such as Painting,</p>	<p>76. Prepare surface for Painting. (04 hrs.)</p> <p>77. Apply paints. (03 hrs.)</p> <p>Varnish surface of woodwork</p> <p>78. Prepare surface for varnishing by smoothing plane. (04 hrs.)</p>	<ul style="list-style-type: none"> • Paints, ingredients of paints. • Name of the agent of paints. • Method of preparation of surface for staining. • Necessary tools and equipment required for

	polishing & varnishing etc.	79. Smoothing plane on knotty and interlocked cross grained. (04 hrs.) 80. Smoothen surface by scraping with sandpaper or portable sander machine. (06 hrs.) 81. Varnish on finished surface. (04 hrs.)	staining. <ul style="list-style-type: none"> • Uses of different grade sandpaper. • Portable sander machine - uses • Preparation of putty and use. • Staining – type, process, methods applied for different timber. (07 hrs)
		Polishing of Furniture – 82. Cleaning of furniture surface. (04hrs.) 83. Application of French polish. (06hrs.) 84. Application of wax polishes. (06hrs.) 85. Remove old polish and re-polish old furniture. (05hrs.) 86. Prepare an estimation of wooden furniture. (04hrs.)	<ul style="list-style-type: none"> • Description & method of French polish. • Method of wax polish and its uses. • Methods of old furniture re-polish. • Estimation process of wooden furniture. (07 hrs)
Professional Skill 75 Hrs; Professional Knowledge 21 Hrs	Demonstrate ripping, cross cutting, curve cutting etc. on band saw/ circular saw machine and grinding and setting of blade/ cutter.	87. Demonstrate band saw machine with different parts & their functions. (07 hrs.) 88. Demonstration to the safety precaution with operational techniques. (07 hrs.) 89. Remove and refit band saw blades. (03 hrs.) 90. Grinding and setting operation of band saw blade. (08 hrs.)	<ul style="list-style-type: none"> • Describe constructional features of band saw machine. • Types of band saw machine. • Sizes of band saw machine. • Parts of band saw machine. • Function of band saw machine. • P.P.E for band saw machine (07 hrs.)
		91. Ripping & cross cutting operation on band saw machine with hard wood. (07 hrs.) 92. Curve cutting operation on hard board or soft wood or ply board by band saw machine. (08 hrs.)	<ul style="list-style-type: none"> • Operation of band saw machine. • Safety precaution of bad saw machine. • Care & maintenance of band saw machine with oiling & greasing. (07 hrs)

		<p>93. Bevelling operation on hard wood/ soft wood. (05 hrs.)</p> <p>94. Chamfering operation on hard wood/ soft wood/ ply board by bend saw machine. (05 hrs.)</p>	
		<p>95. Demonstrate circular saw machine, its parts and their operational techniques with safety precaution. (04 hrs.)</p> <p>96. Remove and refit of circular saw blade. (02 hrs.)</p> <p>97. Grinding and setting operation of the circular saw blade. (04 hrs.)</p> <p>98. Ripping & cross cutting operation on hard wood/ soft wood/ ply wood (not less than 12 mm) by circular saw machine. (04hrs.)</p> <p>99. Rebating & grooving operation on hard wood/ soft wood by circular saw machine. (04 hrs.)</p> <p>100. Mitering operation on hard wood/ soft wood/ plywood (not less than 12 mm) (02 hrs.)</p> <p>101. Demonstrate portable Circular saw machine with different parts & their functions. (04 hrs.)</p> <p>102. Remove and refit of saw blade. (01 hr.)</p>	<ul style="list-style-type: none"> • Describe circular saw machine. • Types of circular saw machine. • Sizes of circular saw machine. • Identify the parts of circular saw machine. • Function of circular saw machine. • Different types of saw blades used in circular saw machine. • Safety precaution of circular saw machine. • Care & maintenance of circular saw machine with oiling & greasing. • Operation of portable type circular saw machine. • Safety precautions • P.P.E for the circular saw machine (07 hrs)
Professional Skill 50 Hrs; Professional Knowledge	Demonstrate different operations on Jointer/surface Planer/Thickness	103. Demonstrate Jointer/surface Planer machine, its parts and their operational techniques and safety precaution. (06 hrs.)	<ul style="list-style-type: none"> • Describe of planning machine. • Types of planning machine. • Sizes of planning machine. • Parts of surface/thickness

14 Hrs	planer machine along with sharpening blades. (Range of operations – Surfacing, thickening, chamfering, edge bending etc.)	104. Remove and refit of cutter of planing machine. (04 hrs.) 105. Sharpening and honing operation of cutter of planing machine. (15 hrs.)	planing machine. • Function of surface/ thickness planing machine. • P.P.E for the surface/ thickness planing machine. (07 hrs)
		106. Surfacing operation on hard wood/ soft wood by planing machine. (06hrs.) 107. Thickness operation on hard wood/ soft wood by planing machine. (06hrs.) 108. Chamfering Operation (06hrs.) 109. Edge bending operation on hard wood/ soft wood by planing machine. (07hrs.)	• Operation of surface / thickness planing machine. • Safety precaution of surface / thickness planing machine. • Care & maintenance of surface / thickness planing machine • Oiling & greasing. (07 hrs)
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Demonstrate working on pedestal grinding (Range of operations – grinding of mushroom head, cutting edge of tools, drills, etc.)	110. Demonstrate pedestal grinding machine, its parts and their operational techniques with safety precautions. (06hrs.) 111. Demonstrate off hand grinding operation as per requirement of the trade. (07 hrs.) 112. Grind mushroom head, cutting edge of tools, drill bits and check correctness. (12 hrs.)	• Pedestal grinding machine - Description, Types, Sizes, Parts, Function, Operation of pedestal grinding machine. • Safety precaution and P.P.E for the pedestal grinding machine • Care & maintenance of pedestal grinding machine with oiling & greasing.(07 hrs)
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Demonstrate working on pedestal /portable drilling machine, use of different types of drill bits, make holes of different sizes in correct location on	113. Demonstrate pedestal drilling machine and its parts & their operational techniques and safety precaution. (06 hrs.) 114. Make different sizes of drill hole on wooden block/ job using straight/ taper shank drill bit. (10 hrs.)	• Pedestal drilling machine - Description, Types, Sizes, Parts, Function, Operation of pedestal drilling machine. • Safety precaution and P.P.E for the pedestal drilling machine • Care & maintenance of pedestal drilling machine

	woodwork.	115. Use of counter sinking bit on job. (07 hrs.) 116. Demonstrate care & maintenance. (02 hrs.)	with oiling & greasing <ul style="list-style-type: none"> Types of drill bits used in drill machine.(07 hrs)
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Demonstrate different operations on wood turning lathe along with sharpening of cutting tools.	117. Demonstrate wood turning lathe, its parts & chisels sets with operational technique and safety precaution. (04 hrs.) 118. Remove, grind and refit cutting tools and set job. (04 hrs.) 119. Plain turning operation on hard wood/ soft wood by wood turning lathe. (04 hrs.) 120. Drilling, boring, taper turning operation on hard wood/ soft wood by wood turning lathe. (05 hrs.) 121. Make chisel handle, table lamp stand, etc on wood turning lathe. (05 hrs.) 122. Internal turning operation using face plate. (03 hrs.)	<ul style="list-style-type: none"> Wood turning lathe – Description, Types, Sizes, Parts, Function, Types, Operation of wood turning lathe. Safety precaution and P.P.E for wood turning lathe. Care & maintenance of wood turning lathe with oiling & greasing. Types and application of set of chisels Signature of cutting tools. (07 hrs)
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Demonstrate different operations on Tenon and mortise machine.	123. Demonstrate working of mortise machine, its part, their operational techniques and safety precaution. (06 hrs.) 124. Adjust table along with feed and job holding. (03 hrs.) 125. Mortising operation on hard wood/ soft wood (300mmX50 mm X 25mm). (05 hrs.) 126. Remove and refit of chain & sprocket with the machine. (05 hrs.) 127. Make groove at the face or	<ul style="list-style-type: none"> Mortise machine – Description, Types, Sizes, Parts, Function, Operation of mortise machine. Safety precaution and P.P.E formortise machine. Care & maintenance of mortise machine with oiling & greasing Calculation of timber, weight, area, volume etc. (07 hrs)

		edge on the job. (06 hrs.)	
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Demonstrate different operations on Sanding machine.	128. Demonstrate working of different types Sanding machine, its part, their operational techniques and working safety precaution. (10 hrs.) 129. Operation on hard wood/ soft wood by using sanding machine. (15hrs.)	<ul style="list-style-type: none"> • Sanding machine – Description, Types, Parts of sanding machine. • Safety precaution and P.P.E for sanding machine. (07 hrs)
Professional Skill 75 Hrs; Professional Knowledge 21 Hrs	Identify and prepare different types of pattern, core box, core print etc. for moulding application with proper allowances and colour codes.	130. Identify pattern making hand tools (02 hrs.) 131. Use contraction rule (01hr.) 132. Demonstrate application of different type of pattern allowances. (05 hrs.) 133. Layout simple solid pattern on layout board. (03 hrs.) 134. Make pattern as per checked layout (take help of wood working machines as much as possible) on teak wood. (06hrs.) 135. Make Layout of split pattern. (03 hrs.) 136. Mark and make split pattern on teak wood. (05 hrs.)	<ul style="list-style-type: none"> • Introduction of pattern • Different hand tool including contraction rule. • Different allocation • Different shrinkage • Drafting • Pattern allowance • Different types of timber used in pattern making. • Types of pattern and their uses. • Application of colour code in pattern making. (07 hrs)
		137. Making dowels for split pattern. (02 hrs.) 138. Use of dowel pin and nail and screw etc. (02 hrs.) 139. Make templates by sun-mica, hard wood. (04 hrs.) 140. Make filets. (03 hrs.) 141. Layout of multi pieces pattern. (07 hrs.) 142. Mark and make multi piece pattern with teak wood as per layout and drawing. (07	<ul style="list-style-type: none"> • Reading of blue print and drawing • Layout board and its use. • Dowel types, size and use in pattern making work. • Multi-piece pattern complication and remedy. (07 hrs)

		hrs.) 143. Mark and make core and core print. (06 hrs.) 144. Prepare core box. (06 hrs.) 145. Carting pattern. (05 hrs.) 146. Positioning of core point (03 hrs.) 147. Apply Colour code on pattern, core box as per IS specification. (05 hrs.)	<ul style="list-style-type: none"> • Types and uses of core and core print. • Colour codes specification. • Use of points on pattern, core, corebox is point. • Estimate volume of wood and other requirement for pattern making box. (07 hrs)
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Produce component involving different operations of fitting work and check for functionality.	148. Mark and make hanging plate, corner plate, name plate, different types of clamps and angle plate by chipping, sawing filling, drilling, counter sinking etc. (14 hrs.) 149. Make nuts, bolts, washers, screws by drilling, taping and dieing. (06hrs.) 150. Grind chisels, drills and check for correct cutting angle. (05hrs.)	<p><u>General safety in fitting shop</u></p> <ul style="list-style-type: none"> • Types of marking and cutting tools and their uses. (viz., marking block, chisels, hammer, hacksaw, files, etc.) • Uses and maintenance of tools – Steel rule, try squares, scriber, divider, calipers and other tools. Marking table, marking block etc. • Application of bench vice, clamps. • Types of drill bits, counter boring tool, taps and dies used in fitting work. • Types of nuts, bolts, washers, machine screws etc. (07 hrs)
Professional Skill 50 Hrs; Professional Knowledge 14 Hrs	Produce component involving different operations of sheet metal work and check for functionality.	<p><u>Sheet metal work (S.M.W)</u></p> <p>151. Mark, cut and make various joints. (06hrs.)</p> <p>152. Develop and mark metal sheet to make simple square container as per drawing. (08hrs.)</p> <p>153. Make simple square container with wired edge</p>	<p><u>Common sheet metal tools –</u></p> <ul style="list-style-type: none"> • Description, type and uses of hand tools for sheet metal work. • Application of various types of hammer. • Application of various types of stakes. • Development of various

		<p>and riveted joint and check dimension of the product. (12hrs.)</p> <p>154. Develop and mark metal sheet to make a funnel as per drawing. (10hrs.)</p> <p>155. Make funnel as per drawing with solder joint and check dimension of the product. (14hrs.)</p>	<p>type of shape.</p> <ul style="list-style-type: none"> • Development of drawing and layout simple pattern • Right concept of shearing, punching, folding, bending etc(14 hrs)
<p>Professional Skill 100 Hrs;</p> <p>Professional Knowledge 28 Hrs</p>	<p>Prepare various roof truss, door and windows frame, shutters, assembling & fixing (wooden, aluminium & pvc).</p>	<p>156. Revision of basic joint related with building work. (04 hrs.)</p> <p>157. Making door shutter. (06 hrs.)</p> <p>158. Making panel door. (06 hrs.)</p> <p>159. Making door glazed shutter. (06 hrs.)</p> <p>160. Fitting moulding with glass. (03 hrs.)</p>	<ul style="list-style-type: none"> • Introduction about building construction. • Different type door & windows and different size. • Different type panel used for panel shutter, glazed shutter. • Substitute of wood viz., block board, hard board etc. (07 hrs)
		<p>161. Marking and making window frame and window shutter. (06 hrs.)</p> <p>162. Use protection bar. (05 hrs.)</p> <p>163. Roof trusses layout. (06 hrs.)</p> <p>164. Make Model type king post and queen post. (08 hrs.)</p>	<ul style="list-style-type: none"> • Description of window frame and shutter • Uses of frame and shutter of window • Definition of roof trusses • Terms of king post and queen post. (07 hrs)
		<p><u>Prepare sliding window & 'Z' battened window by aluminum channel</u></p> <p>165. Angular cutting of aluminium bar at different angle and size. (06 hrs.)</p> <p>166. Join angular aluminium bar by screw and modern adhesive like dendrite, feviquick etc. (06 hrs.)</p> <p>167. Aluminium channel bar joining by fibre glass (06</p>	<ul style="list-style-type: none"> • Description of aluminium • Anodising of the aluminium windows, channel, section etc. • Knowledge of different aluminium section, channels required for manufacturing the windows. • Drilling of aluminium bar and joining by screw and adhesive.

		<p>hrs.)</p> <p>168. Fiber glass shutter fitted with aluminium channel. (07 hrs.)</p>	<ul style="list-style-type: none"> • Knowledge of fibre glass • Introduce about rubber padding /gasket and aluminium wheel. • Uses of channel window which is involved in building construction. (07 hrs)
		<p>169. Assembling and fixing of P.V.C door for kitchen and W.C bath. (25 hrs.)</p> <ul style="list-style-type: none"> • Cutting angular wise P.V.C door frame. • Forming shape by joining adhesive and screwing. • P.V.C shutter door finish by adhesive and screwing. • Assembling & fixing the PVC door. 	<ul style="list-style-type: none"> • Uses of P.V.C as substitute of wood. • Give more get-up and cheapest in price. • New style framing work. • Modern technologies follow up P.V.C moulding. • Advantages and disadvantages (07 hrs)
<p>Professional Skill 25 Hrs;</p> <p>Professional Knowledge 07 Hrs</p>	<p>Paint various door, windows frame, stair and furniture (wooden or aluminum).</p>	<p>170. Removal of old painting by application of chemical paint remover. (04 hrs.)</p> <p>171. New painting for door, window stair, furniture, etc. (04 hrs.)</p> <p>172. Plain and smoothing of door & window and staircase railing. (05 hrs.)</p> <p>173. Apply Synthetic enamel primer on the new surface. (08 hrs.)</p> <p>174. Apply synthetic enamel paint or oil paint on the priming surface as finishing coat. (04 hrs.)</p>	<ul style="list-style-type: none"> • Apply of removing old painting by new chemical then after repainting on furniture • Uses of new painting and priming on furniture. (07 hrs)
<p>Professional Skill 50Hrs;</p> <p>Professional Knowledge</p>	<p>Prepare various type of wooden floor, partition wall etc.</p>	<p>175. Identification of simple floor construction. (10hrs.)</p> <p>176. Use the cogged joint for wooden floors. (10hrs.)</p> <p>177. Demonstrate different type</p>	<ul style="list-style-type: none"> • Purpose of using floor construction with different types of joist. • Basic principal of repairing work, door window,

14Hrs	Check, identify, analyze and repair the wooden job.	<p>basement floor single joint wooden floor and double joint wooden floor. (10hrs.)</p> <p>178. Make structure of wooden partition wall. (10hrs.)</p> <p>179. Repair and recondition furniture, door and window, staircase hand railing. (10hrs.)</p>	<p>staircase rack etc.</p> <ul style="list-style-type: none"> • Illustrate of nail screw bracket angle plate nut bolt, etc. • Economic factors and material estimates. • Hilti laser tools, types and their applications(14 hrs)
<p>In-plant training / Project work Projects viz.</p> <ol style="list-style-type: none"> a. Pen stand b. Flower vase c. Drawing Board d. Notice Board e. Doors f. Windows, etc. 			

SYLLABUS FOR CORE SKILLS	
1.	Workshop Calculation & Science (Common for one year course) (80 hrs)
2.	Engineering Drawing (80 hrs)
3.	Employability Skills (Common for all CTS trades) (160 hrs)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in

LIST OF TOOLS AND EQUIPMENT			
CARPENTER (For batch of 24 trainees)			
S No.	Name of the Tools & Equipment	Specification	Quantity
A. TRAINEES TOOL KIT (For each additional unit trainees tool kit S no. 1-19 is required additionally)			
1.	Foot rule/steel tape	Two ft. Four-fold/6 mtrs.	(24+1) nos.
2.	Steel Measuring Scale	Twelve inch	(24+1) nos.
3.	Marking Knife	200 mm length	(24+1) nos.
4.	Try Square	200mm	(24+1) nos.
5.	Bevel Square	50 mm	(24+1) nos.
6.	Carpenter marking gauge		(24+1) nos.
7.	Carpenter mortise gauge		(24+1) nos.
8.	Hand Saw	450mm	(24+1) nos.
9.	Tenon saw	300mm	(24+1) nos.
10.	Metal Jack plane	335mmX 50mm cutter	(24+1) nos.
11.	Metal smoothing plane	200mm X 50mm cutter	(24+1) nos.
12.	Firmer Chisel	Bevel edge 6mm. 10, 15, 20 and 25mm width (5 nos.)	(24+1) nos.
13.	Mortise chisel	06, 10, 15mm (3 nos.)	(24+1) nos.
14.	Screw driver	300mm	(24+1) nos.
15.	Mallet	medium size	(24+1) nos.
16.	Claw hammer	500 gms	(24+1) nos.
17.	Oil stone	Carborundum universal silicon carbide combination rough and fine.	(24+1) nos.
18.	Contraction measuring scale	as per standard size	(24+1) nos.
19.	Hand brush for cleaning	450mm	(24+1) nos.
B. INSTRUMENT AND GENERAL SHOP OUTFIT			
INSTRUMENT			
20.	Measuring tape	3 meter	01no.
21.	Construction scale	1 meter	04 nos.
22.	Spring caliper (inside)	150 mm	04 nos.

23.	Spring caliper (outside)	150 mm	04 nos.
24.	Wing compass	300 mm	02 nos.
25.	Trammel	300 mm	02 pair
26.	Sprit level	300 mm	02 nos.
C. GENERAL SHOP OUTFIT			
27.	Rip saw	600 mm	04 nos.
28.	Cross cut saw	250 mm	02 nos.
29.	Key hole saw	250 mm	02 nos.
30.	Fret saw frame	150 mm	02 nos.
31.	Compass saw	350 mm	04 nos.
32.	Adze	15 kg	04 nos.
33.	Trying plane metal	450 mm X 60 mm Cutter	02 nos.
34.	Plane rivet adjustable	250 mm X meters x 9 mm Cutters	04 nos.
35.	Plough plane	with set of 8 cutter up to 12 mm Width	04 nos.
36.	Spoke shaves	50 mm Cutter	08 nos.
37.	Plane adjustable circular	250 mm	04 nos.
38.	Router plane	197 X 42 mm	04 nos.
39.	Moulding plane set		04 nos.
40.	Cabinet scraper	100 mm	04 nos.
41.	Gauge chisel, firmer,	6,10,12,16,20mm	08 sets
42.	Gauge chisel, scribing	6,10,12,16,20mm	08 sets
43.	Ball pein hammer	600 grs	04 nos.
44.	Cross pein hammer	600 grs	04 nos.
45.	Screw driver	450 mm	04 nos.
46.	Screw driver	250 mm	04 nos.
47.	Screw driver	150 mm	04 nos.
48.	Pincer	50 mm	04 nos.
49.	File half round	2nd cut 250 mm	08 nos.
50.	File half round	Wood rasp bastard 250mm	08 nos.
51.	File slim taper	100 mm	12 nos.
52.	File slim taper	150 mm	12 nos.
53.	Card file (steel) wire brush for file	200 mm	04 nos.

54.	Hands drill	6 mm Capacities	08 nos.
55.	Country drill with bow (ball bearing type)	620 X 726 mm	04 nos.
56.	Ratchet brace	250 mm Swap	04 nos.
57.	Hand auger	10,12,14,16,18,20,22,25 mm	02 sets
58.	Centre bits	6,8,10,12	02 sets
59.	Expansion bit sets	218 X 171 mm	02 sets.
60.	Twist drill bits	6,8,10,12 mm	02 sets
61.	Counter sink bit rose type	12 mm	04 nos.
62.	Breast drill	6 mm. capacity	02 nos.
63.	Centre punch	5mm	04 nos.
64.	Snip straight	200 mm	04 nos.
65.	Oil cans	225 X 225 mm	02 nos.
66.	Combination side cutting pliers	250 X 250 mm	02 nos.
67.	Plunger saw set/ pistol grip type.	300 X 300 mm	02 nos.
68.	Number punch	12 mm.	02 sets
69.	Slip stone	100 mm	08 nos.
70.	Round crow bar	with chisel and claw end 1070 x 25mm	02 nos.
71.	'G' clamp	100 mm	08 nos.
72.	'G' clamp	150 mm	08 nos.
73.	'G' clamp	250 mm	04 nos.
74.	'T' bar cramp	0.6 meter	08 nos.
75.	'T' bar cramp	1.25 meter	04 nos.
76.	'T' bar cramp	1.75 meter	02 nos.
77.	Carpenter vice	250 mm jaws	25 (24+1) nos.
78.	Saw sharpening vice	250 jaws	02 nos.
79.	Carving tools set		04 sets
80.	Goggles pair		02 nos.
81.	Glass cutter		02 nos.
82.	Nail punch		04 nos.
83.	Surface plate	600x 600 mm	01 no.
84.	Carpenter's work bench	2400x920x800 mm Height	08 nos.
85.	Blower		04 Nos.

86.	Grease gun		01 no.
87.	Spanner double ended	set of 14	01 no. of set
88.	Fire extinguisher		01 no.
89.	Fire buckets		04 nos.
90.	Steel lockers, 8 Compartments, with Individual locks	1980 x 910 x 480 mm depth	03 nos.
91.	Steel Almirah with shelves	1980 x 910 x 480 mm depth	02 nos.
92.	Instructor table (half secretariat)		01 no.
93.	Instructor chair		02 nos.
94.	Stool		01 no.
95.	Chalk board with easel		01 no.
96.	Material rack		01 no.
D. GENERAL MACHINERY SHOPOUTFIT			
97.	Portable circular saw machine		02 nos.
98.	Portable planing machine		02 nos.
99.	Power drill machine		02 nos.
100.	Portable sander machine		01 no.
101.	Portable jig saw machine		02 nos.
102.	Portable router machine		01 no.
103.	Power screwdriver		02 nos.
104.	Combined surface and thickener		01 no.
105.	Circular saw machine	300 mm. dia.	01 no.
106.	'Lathe, wood turning	150 mm height of centres 1.75-meter bed, motorised complete with a set of turning tools	03 nos.
107.	Set of turning tools for above lathe machine		03 sets
108.	Tenoning machine (single ended)		01 no.
109.	Mortising machine (combine hollow chisel and chain)		01 no.
110.	Bench grinder	200 mm. whole D.E. pedestal	01 no.
111.	Drill machine	12 mm. Capacity	01 no.
112.	Portable electric drill	6 mm. Capacity (wolf type)	01 no.
113.	Drills chuck	12 mm capacities.	01 no.
114.	Portable disc sander	200 mm. Dia	01 no.
115.	Adjustable saw sharpener		01 no.
116.	Electric heater	1000/1500 w 1 nos.102. Electric	01 no.

		blower (portable)	
117.	Moisture meter		01 no.
118.	Universal wood working machine		01 no.
119.	Electrical drying oven (small type)		01 no.
120.	Band saw machine with provision		01 no.
E. CLASS ROOM FURNITURE			
121.	Instructor's table and Chair (Steel)		1 set
122.	Students chairs with writing pads		25 (24+1) nos.
123.	White -board size 1200mm X 900 mm		1 no.
124.	Instructors lap top with latest(vista & above) configuration pre-loaded with operating system. and MS Office package.		1 no.
125.	LCD projector with screen.		1 no.
126.	CD & DVD of different joint related to carpenter works and variety design of modern furniture		1 set each (optional)
127.	Visualizer (latest configuration)		1 no.
<p>Note:</p> <ol style="list-style-type: none"> 1. No additional items are required to be provided to the batch or unit working in the second shift except the items under the Trainees tool kit and lockers. 2. The trainee for the main trade will be sent to the different sections for allied trade training. Separate list of tools and equipment required for allied trades are not included in this list. 3. Internet facility is desired to be provided in the class room. 			

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts, trainers of ITIs, NSTIs, faculties from universities and all others who contributed in revising the curriculum.

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

List of Expert members participated for finalizing the course curricula of Carpenter trade held on 3rd May 2017 at CSTARI, Kolkata			
SNo.	Name & Designation Sh./Mr./Ms.	Organization	Remarks
1.	Sanjay Kumar, Jt. Director of Trg.	Central Staff Training Institute, Kolkata	Chairman
2.	TusharBagchi, Principal	L & T Construction Skill Training Institute, Kolkata	Member
3.	RajibNath, Curator "E"	Birla Industrial & Technological Museum, Kolkata	Member
4.	AbhishekChatterjee, Human Resource Executive	The Park, Kolkata	Member
5.	R.N. Bandyopadhyay, Chairman	Board of Studies & Skill, WBSCT&VE&SD	Member
6.	NaniGopalMondal, Supervisor	Govt. I.T.I, Tollygunge, Kolkata,W.B.	Member
7.	SupriyaRana, Instructor	Advanced Training Institute, Kolkata	Member
8.	Joy Mondal, Instructor	Govt. I.T.I, Howrah Homes	Member
9.	Dilip Kr. Sarkar, Instructor	Govt. I.T.I, Hooghly, W.B.	Member
10.	NirmalAdhikari, Instructor	Govt. I.T.I, Kalyani, W.B.	Member
11.	L. K. Mukherjee, Dy. Director of Trg.	Central Staff Training Institute, Kolkata	Member
12.	NirmalyaNath, Asst. Director of Trg.	Central Staff Training Institute, Kolkata	Member
13.	Ashish Kr. Mondal, Asstt. Director	Central Staff Training Institute, Kolkata	Member
14.	R.N.Manna, Training Officer	Central Staff Training Institute, Kolkata	Coordinating Member

ABBREVIATIONS

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Locomotor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with Disabilities

