

**Syllabus for the trade**  
**of**  
**CARPENTER**  
**(SEMESTER PATTERN)**  
**under**  
**CRAFTSMAN TRAINING SCHEME**

**Designed in 2011**

**By**  
**Government of India**  
**CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE**  
**Directorate General of Employment & Training**  
**Ministry of Labour & Employment**  
**EN-81, Sector-V, Salt Lake City,**  
**Kolkata-700091**

List of members of the Trade Committee meeting for the Trade of “**CARPENTER**” held on 20-10-2011, at Advanced Training Institute ,Kolkata.

Sl.No	NAME& DESIGNATION S/SHRI	REPRESENTING ORGANIZATION	REMARKS
1.	N.K.Chatterjee,Director	A.T.I.Kolkata	Chairman
2.	J.Ukil. Jt.Director	A.T.I.Kolkata	Member
3.	S.P.Bhatterjee,DDT	A.T.I.Kolkata	Member
4.	G.C.Saha,ADT	A.T.I.Kolkata	Member
5.	Prasanta Kumar Paul,JE	CPWD,Kolkata	Member
6.	A.K.Kolay,Asst.Engg.	CPWD,Kolkata	Member
7.	A.K.Dutta,ADT	A.T.I.Kolkata	Member
8.	A.K.Mondal,ADT	A.T.I.Kolkata	Member
9.	Sk.A.Hossain,T.O	A.T.I.Kolkata	Member
10.	Sankar Chakraborti	Consulting Engineer	Member
11.	G. N. Pramanik	Regional Training Manager, Larsen & Toubro Limited, Kolkata	Member
12.	Saikat Dutta	Project Manager, M/s Unit Construction Co.(P) Ltd. Kolkata	Member
13.	Bijradas Kari	Representative of Govt.of W.B	Member
14.	S.R.Vhatkar,T.O	ATI ,Kolkata	Member
15.	T.K.Halder	ATI,Kolkata	Member
16.	S.Rana,V.I	ATI,Kolkata	Member
17.	Dilip Ghosh	ATI Kolkata	Member
18.	R.K.Saha	ATI,Kolkata	Member

**List of members attended the Workshop to finalize the syllabi of existing CTS into**

**Semester Pattern held from 6<sup>th</sup> to 10<sup>th</sup> May' 2013 at CSTARI, Kolkata.**

<b>Sl. No.</b>	<b>Name &amp; Designation</b>	<b>Organisation</b>	<b>Remarks</b>
1.	R.N. Bandyopadhyaya, Director	CSTARI, Kolkata-91	Chairman
2.	K. L. Kuli, Joint Director of Training	CSTARI, Kolkata-91	Member
3.	K. Srinivasa Rao, Joint Director of Training	CSTARI, Kolkata-91	Member
4.	L.K. Mukherjee, Deputy Director of Training	CSTARI, Kolkata-91	Member
5.	Ashoke Rarhi, Deputy Director of Training	ATI-EPI, Dehradun	Member
6.	N. Nath, Assistant Director of Training	CSTARI, Kolkata-91	Member
7.	S. Srinivasu, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
8.	Sharanappa, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
9.	Ramakrishne Gowda, Assistant Director of Training	FTI, Bangalore	Member
10.	Goutam Das Modak, Assistant Director of Trg./Principal	RVTI, Kolkata-91	Member
11.	Venketesh. Ch. , Principal	Govt. ITI, Dollygunj, Andaman & Nicobar Island	Member
12.	A.K. Ghate, Training Officer	ATI, Mumbai	Member
13.	V.B. Zumbre, Training Officer	ATI, Mumbai	Member
14.	P.M. Radhakrishna pillai, Training Officer	CTI, Chennai-32	Member
15.	A.Jayaraman, Training officer	CTI Chennai-32,	Member
16.	S. Bandyopadhyay, Training Officer	ATI, Kanpur	Member
17.	Suriya Kumari .K , Training Officer	RVTI, Kolkata-91	Member
18.	R.K. Bhattacharyya, Training Officer	RVTI, Trivandrum	Member
19.	Vijay Kumar, Training Officer	ATI, Ludhiana	Member
20.	Anil Kumar, Training Officer	ATI, Ludhiana	Member
21.	Sunil M.K. Training Officer	ATI, Kolkata	Member
22.	Devender, Training Officer	ATI, Kolkata	Member
23.	R. N. Manna, Training Officer	CSTARI, Kolkata-91	Member
24.	Mrs. S. Das, Training Officer	CSTARI, Kolkata-91	Member
25.	Jyoti Balwani, Training Officer	RVTI, Kolkata-91	Member
26.	Pragna H. Ravat, Training Officer	RVTI, Kolkata-91	Member
27.	Sarbojit Neogi, Vocational Instructor	RVTI, Kolkata-91	Member
28.	Nilotpal Saha, Vocational Instructor	I.T.I., Berhampore, Murshidabad, (W.B.)	Member
29.	Vijay Kumar, Data Entry Operator	RVTI, Kolkata-91	Member

## GENERAL INFORMATION

1. Name of the Trade : **CARPENTER**
2. NCO Code No :
3. Duration : One year (Two semesters of each six months Duration)
4. Power Norms : 4 Kw.
5. Space Norms : 96 Sq. Mtrs
6. Entry Qualification : 8<sup>th</sup> class passed
  
7. Unit Size (No. Of students) : 16
  
8. Instructor's/Trainer's Qualification:
  - a) Degree or Diploma in Mechanical Engineering with 1 or 2 years post qualification experience respectively.  
Or, NTC in the relevant trade with 5 years post qualification experience.  
Or, NAC in the relevant trade with 4 years post qualification experience.
  - b) Desirable Qualification: Preference will be given to a candidate with Craft Instructor Certificate..

**\*Note: At least one Instructor must have Degree or Diploma in Mechanical Engineering**

# Syllabus for the trade of “Carpenter” under C.T.S.

Duration: Six Month

First Semester

Semester code:- CRP:SEM-I

Week No	Trade Practical	Trade Theory	Engg. Drg.	Workshop Cal. & Science
1	<p>Familiarization with the workshop, sections and the general places, wood working sections and wood working machine shop. Show different exercises / jobs done by the trainees in the previous year batches etc. Show different audio – visual aids, library, show room etc.</p>	<p>Importance of the trade in the industrial development of the country. Introduction to the general safety, causes of accident and avoidance. Give some instruction related with the duties of the trainees, discipline recreational, medical facilities and other extracurricular activities of the institute. (All necessary guidance to be provided to the new comers to become familiar with the working of the industrial training institute system including stores procedures.)</p>		
2 & 3	<p>Identification of hand tools. Demonstration and use of measuring and marking tools.  <b>Sawing practice:</b> - use of different types of the saws : Ripping, cross cutting, curve cutting, oblique sawing etc.; Use of the saw horse, bench hook, bench vice, bench stop etc. Identification of timber and defects of timber viz. knots, shakes, grains etc.</p>	<p>Safety precaution of the carpentry hand tools. Workshop discipline and safety first aid etc. Introduction to the trade and to carpentry hand tools, their classification, names and the uses. Measuring, marking and testing tools, types, sizes, uses, etc.  <b>Saw and the Plane:</b> description, types, sizes, setting, sharpening, uses, etc.  <b>Introduction to timber :</b> growth of a tree, cross-section of a tree trunk, parts, formation,</p>	<p>Importance of Engg. Drg. And its knowledge-Free hand sketches of straight, oblique and perpendicular lines plain figures like square, rectangle, square, circle, polygons triangles etc.</p> <p>Identification of simple geometrical solids from the given models/teaching aids – Free hand sketches for the simple solids like, cube, cone, prism, pyremid, rectangular blocks etc.</p>	<p>Properties and uses of C. I. and W. I.</p> <p>Fundamental Arithmetical operation-Addition, subtraction, Multiplication, Division of whole numbers.</p>

	<p><b>Planing practice:</b>          Demonstration and uses of the planes. Setting of the plane, holding, Planing techniques. Planing face side, face edge, use of marking gauge etc.</p> <p>Testing of the of the accuracy, flatness and twistness of the surface. Use of straight edge, bench stop, try square, winding strips, cross planing, edge planing etc. Grinding and sharpening of the plane blades.</p>	functions and defects of timber.		
4 & 5	<p><b>Chiseling practice -</b>          Demonstration and use of different types of chisels. Chiseling along the grain, across the grain of the vertical, horizontal etc. Grinding, sharpening and honing of chisel.</p>	<p><b>Hand tools:</b> Different types of the chisels, description, sizes, uses. Grinding, sharpening &amp; honing etc.</p> <p><b>Workshop appliances:</b> work bench, bench vice, bench hook, bench stop shooting board, mitre board etc. - types, sizes , uses etc.</p>	Importance of good printing of letters and numbers on drawing free hand practice of lettering and numbering style as per is 696/1972.	Properties and uses of plain carbon steel and alloy.
6 to 8	<p><b>Joint practice:-</b>          Demonstration and making framing joints :-          Halving joints, trenching and housing joints, Mortise and tenon joints, plain haunched, stub tenon, bare faced tenon, bridle joints etc.          Sharpening and setting of different types of saws.</p>	<p>Classification and grading of timbers as per ISI. Defects and diseases in the timber, causes and remedies, types of the grains. Joineries: Classification of joint groups names (framing, broadening and the lengthening)</p> <p><b>Framing Joints:-</b>          Halving, trenching and the housing joints, description, types and uses. Mortise and tenon joints different types and uses.</p> <p>Hand tools: Sharpening and the setting of the different types of the saws. Saw set, saw sharpening files etc.</p>	<p>Standard line convention and their meaning and their scope of application on Eng. Drg. As per is 669/1972 std. symbols for simple eng. Elements and materials used on drg. As per ISI, (Hand out to be used for.)</p> <p>Free hand sketches of hand tools and measuring tools, related to the trades e.g. hammer, file, chisel drill, hack-saw tongs snips, solder-iron mallets, anvil, punch, horn, blow pipe, electrode holder scale, caliper, try square, bench vice etc. from the supplied sketches or</p>	<p>Fraction and decimals conversion fraction to decimal and vice versa. Properties and uses of copper, zinc, lead, tin and Aluminium.</p>

			samples.	
9 & 10	<p><b><u>Demonstration and making Dovetail joints:</u></b> Single dovetail, Common dovetail, lapped dovetail, secret dovetail joints, use of dovetail template etc.</p>	<p><b><u>Dovetail joints -</u></b> Description, types, pin size, uses etc. <b><u>Timber:</u></b> stacking (vertical and horizontal) Moisture content in timber and its effect on timber, moisture meter and oven method. Characteristics of wood, Physical and mechanical properties of wood, qualities of good timber.</p>		
11 & 12	<p><b><u>Broadening joints:</u></b> Demonstration and making different types of broadening joints - simple butt, rebated butt, pocket screw, glued butt, tongue and groove joints etc.</p>	<p>Broadening and lengthening joints - description, types, uses. Adhesives - types, uses etc. <b><u>Hand tools:-</u></b> Types of special saws &amp; planes and their uses.</p>	-do-	<p>Simplification, application of fundamental arithmetical operation to shop problems. Properties and uses of brass, bronze, solder, bearing metal timber, rubber.</p>
13 & 14	<p><b><u>Lengthening joints: Different types of scarf joints</u></b> - Table scarf, bevel scarf, tension scarf etc.</p>	<p><b><u>Seasoning of Timber:</u></b> Types, advantages, disadvantages etc. <b><u>Holding tools</u></b> - Clamps, sash /'T' bar cramps etc. <b><u>Striking tools</u></b> - Hammers, mallets etc.</p>	-do-	<p>System of units- British Metric and S.I. units for length area, volume, capacity, weight, time, angle their conversion.</p>
15	<p><b><u>A frame of different type of joints</u></b> - Small article involving above joints may be made.</p>	<p><b><u>Files:</u></b> Types, grades, uses, care and maintenance.</p>	<p>Importance of putting dimension on the drawing as per IS 696/1972. How is measure the sizes of simple parts and the locations of the other operational surfaces, using simple measuring instruments and how to transfer the measurements or on the drawings of the features for dimension; free hand sketches to study the techniques employed in dimensioning on the drg. Of features for size, location, hole arcs, angles, chamfer, taper etc. from given sample or</p>	<p>Effect of alloying elements on the property of C.I. and steel.</p>

			sketches.	
16 & 17	<p><b>Simple wooden furniture making work:</b> Demonstration and practice on - <b>Special saws</b> - Compass saw, coping saw, Bow saw, fret saw portable circular saw.</p> <p><b>Special planes :-</b> Compass plane, Molding planes, Portable planer machine.</p> <p>Making a small wall bracket. Prepare chalk box. Tea tray or office Tray.</p>	<p><b>Hand Tools and portable power tools - curve cutting saws :-</b> compass saw, coping saw, bow saw, fret saw etc. - description, types, size, use, care and maintenance. Sharpening and setting of saws. Portable circular saw and its uses. <b>Special planes –</b> Compass plane, Moulding plane, Rebate plane, Grooving plane etc. - description, type, size, use, care and maintenance. Portable power planer machine and its uses. <b>Preservation of timber:</b> Chemical treatment of timber - types, process etc. and preservatives used.</p>	<p>Isometric and oblique. Drawing their methods of representation using simple solids like cube, rectangular block, stepped block cylindrical features, prisms etc. Free hand sketches for the given features.</p>	<p>Heat and temperature, thermometric scales their conversion temperature measuring instruments, quantity of heats, specific heat, latent heat, heat loss and heat gain-simple problems.</p> <p>Rest and motion, velocity, acceleration. Newton's law of motion.</p> <p>Moment of forces simple problems on straight and bell cranked levers. Mass, volume, density, weight. C. G. S. M. K. S. and F. P. S. units of force weight etc. their conversion shop problems.</p>
18	<p>Use of country drill, hand drill, ratchet brace, breast drill.</p> <p>Portable electric drill machine and its uses.</p> <p>Use of different types of drill bits, hand augur, layout of a stool and make cutting list. Prepare a standard height. Taper legged stool as per lay out. Use of Adhesives.</p>	<p>Country drill, hand drill, ratchet brace, breast drill – parts, functions, size and use. Portable electric drilling machine - description, uses etc. Drill bits - type, size and uses. Calculation of timber required for stool. Prepare cutting list from drawing (sawn size and finish size). Hand augur – description, size &amp; uses.</p>		
19 &	Demonstration and make layout of	Description of timbers used in furniture making	Orthographic projection std. systems (1 <sup>st</sup> angle	Powers and roots factors, power,



20	<p>different furniture. Making notice board or display board. Use of hard board, ply wood and insulation board. Making a small rack/modern wall unit.</p>	<p>work: - Teak, Sal, Deodar and other wood as available in the local market. Design of Furniture's for different purpose :- Bed room, dining Hall, Library, Office, Work-shop, Class room, Kitchen, Garden etc. Manufacturing process of various boards and sheets, And their applications viz. - ply wood, block board, laminated board, hard board, insulation board etc. and their description, types, market size, use. Selection of sheets and matching grade and colour. addition with particle board, Hi-density board, and medium density board – their manufacturing, quality and their application.</p>	<p>orthographic projection &amp; 3<sup>rd</sup> angle projection IS 696/as per 1972 free hand sketches of simple objects like vee blocks, stepped blocks, simple brackets, blacks with holes and grooves to represent the views both in 1<sup>st</sup> and 3<sup>rd</sup> angles.)</p> <p>Orthographic projection with dimensions.</p>	<p>base, exponent. Multiplication and division of power, root of a number. Square root by arithmetic and problem related to trade.</p> <p>Effect of forces on materials in such application as extending, bend lug twisting, shearing etc meaning of stress and strain.</p> <p>Percentage changing percent to decimal and fraction and vise versa.</p>
21 & 22	<p>Making a small table. Demonstration and use of lock, hinges, hasp and staple etc. Making a small box with sunmica top.</p> <p>Wood carving exercises and use of carving tools and their sharpening.</p>	<p><b>Nails and screws:-</b> Types, size and uses , Nuts and bolts, washers. Lock, hinges, hasp and staple, tower bolt etc. <b>Other fittings:-</b> Types, size and uses.</p> <p>Tools required for carving ornamental works. Properties of wood. Preparation of bill of materials and simple estimation.</p>		<p>Problems on percentage related to trade. Meaning of stress strain modulus of elasticity.</p>
23 & 24	<p>Preparation of surface - use Smoothing plane for knotty or interlocked cross grained timber by scraping, sand papering and portable sander machine etc. Preparation of putty and use. Preparation of</p>	<p>Method of preparation of surface for staining, tools and equipment required. <b>Sand paper</b> - types, grades, size &amp; uses. Portable sander machine and uses. Preparation of putty and use. <b>Stain:-</b> Type, process, methods and staining materials.</p>	<p>Importance of sectioning on drawing Std-methods (full and half section, revolved and removed section, location as per IS 696/1972 std. parts which are sectioned free hand sketches to represent the different sectional views in the given orthographic</p>	<p>Meaning of tenacity, elasticity, malleability, brittleness, hardness, ductility examples.</p> <p>Ratio and proportion : Ratio; finding terms and ratio;</p>

	<p>stainer and application on finished surface. Varnishing on finished surface. <b>Furniture polishing:-</b> Demonstration on how to make French polish, use of French polish and wax polish. Remove the polish and Re-polishing old furniture.</p>	<p>Different staining methods applied for different timber. <b>Varnish:-</b> Type and use. French polish, wax polish, types and uses. Estimation of timber.</p>	<p>drawing of parts with the support of models e.g. simple hollow blocks and simple castings with dimensions. )</p>	<p>proportions direct proportion and indirect proportion.</p>
25	<p>i) Project Work ii) Industrial visit (optional)</p>			
26	Examination			

**Achievements:**

1. The trainees will be able to identify, select and use tools and timbers and makes simple joints.
2. Trainees will be able to make simple objects viz. tray, rack, stool, table, wall unit etc
3. Trainees will be able to finish the furniture with staining, varnishing and polishing.
4. Trainees will be able to operate the portable power machines.
5. Trainees will be able to repair various furniture and re-polishing.

## Syllabus for the trade of “Carpenter” under C.T.S.

Duration: Six Month

Second Semester

Semester code:- CRP:SEM-II

Week No.	Trade Practical	Trade Theory	<i>Engg. Drg.</i>	<i>Workshop Cal. &amp; Science</i>
1,2&3	<p>Introduction and demonstration of wood working machines. Safety precautions. Machine parts, function and operational techniques of wood working machines and various operations.</p> <p>A) Band saw :- remove and refit of band saw blades setting and grinding Operation :- Ripping making planks/ scantling from a log. Cross-cutting, curve cutting, beveling, chamfering etc.</p> <p>B) Circular Saw :- Ripping, cross cutting, rebating , grooving etc.</p> <p>C) Planning Machine :- Surfacing, thicknessing, chamfering, edging beveling etc,</p> <p>D) Wood Turning lathe: - Use of turning tools, plain turning, taper turning and Turning different articles- Chisel handles, table lamp stand etc. Use of face plate, chuck etc.</p>	<p><b><u>Wood working machines:</u></b> Description, types, sizes, parts, functions, operations. Safety precautions, care and maintenance. Oiling, greasing etc. of the following machines: A) Band Saw B) Circular saw C) Planning machine D) Wood Turning Lathe with Turning tools. Market form of timber. Conversion of timber-method, advantages, disadvantages.</p>	<p>How to convert isometric to oblique's drg. Orthographic and orthographic to isometric oblique. Drawing related problems for free hand sketches for trade related simple parts or exercises.</p> <p>Free hand sketches of standard rivet forms as per I.S. I. employed on drawings. Standard forms of key and cotters.</p> <p>Free hand sketches to study the method of surface development of simple geometrical solids like cube, cone, prism, pyramids rectangular block etc.</p>	<p>Application of ratio and proportion to shop problem.</p> <p>Mixed direct and indirect proportions problems.</p> <p>Algebraic symbols and fundamentals algebraic operations.</p> <p>Sign and symbols used in algebra; co-efficient, terms like and unlike terms.</p> <p>Algebraic addition, subtraction, multiplication and division.</p> <p>Power and exponent, laws of exponent.</p> <p>Algebraic simplification problems.</p> <p>Electrical and its uses :-</p>

				Electric current – positive and negative terminals use of fuses and switches conductor and insulator.
4, 5 & 6	Demonstration and use of following- A) Drilling Machine: Use of straight shank drills, taper shank drills, counter sinking bits etc. B) Grinding Machines :- Grinding of different types of tools, cutters, materials for jobs. C) Mortiser Machine. D) Universal wood working Machine.	Description, types, sizes, parts, functions, operations, safety precautions, care and maintenance etc. of the following machines- A) Drilling Machine. B) Grinding Machine. C) Mortiser Machine. D) Universal wood working Machine.  Calculation of timber – weight, area, volume etc		
7	<b>Basic pattern making work:</b> Simple pattern making exercises.  Identification of pattern making hand tools, use of contraction rule, show different type of pattern. Lay out of simple solid pattern on layout board. Making patterns as per checked layout. (Take help of wood working machines as much as possible.)	Introduction to pattern making hand tools. Contraction rule and different allowances. Shrinkage, drafting, machine allowances. Different types of timbers used in pattern making. Reading of blue print. Layout board and its use. Types of pattern and their uses.		
8	Layout of split patterns. Marking and making split patterns. Making dowels for above pattern. Use of dowel pin. Use of nail, screws etc. Making templates. Use required machine wherever necessary.	<b>Split patterns</b> -Types and uses. <b>Dowel-</b> types, size and uses in pattern making work.		
9 & 10	Marking and making patterns with self core and with core prints. Prepare core box and pattern. 1) Casting pattern 2) Machining position core print. Painting the pattern, core box etc. as per IS specifications.	<b>Core and core prints:</b> Types & uses. Colour code as per IS specifications. Use of paints on pattern core, core box, core prints etc. Estimate volume of wood and other requirements for pattern making box.		

<p>11, 12 &amp; 13</p>	<p><b>Allied Training :</b>  <b>1) SIMPLE FITTING WORK —</b>  Safety precaution to be observed while using marking tools: Steel rule, Square, Scriber, divider, calipers, punch, hammer ,marking table, marking block etc.  Use of hand tools: Hack saw, cold chisels, different types of file.  <b>Skills :</b>  Filing, drilling, counter sinking, taping, dieing practice.  Grinding of cold chisels, punch, drill bits etc.  Marking and making hanging plate, corner plate, name plate, different types of clamps and angle plate use for wooden furniture. Use of nuts, bolts, washers, machine screws etc.</p>	<p>General safety in fitting shop.  Marking tools: Types, specification, use, care and maintenance of tools: Steel rule, squares, scriber, divider, calipers, and other tools. Marking table, marking block etc. description, specification, uses etc.  Use of bench vice and clamps.  Types of drill bits, counter sinking tool, counter boring tool, taps and dies used in fitting work.  Types of nuts, bolts, washers, machine screws etc.</p>	<p>Screw thread forms as per I.S.I. conventional application of internal and external screw thread free hand sketches of nut, bolts, screw etc.   Importance of blue print reading – guide line how to read – simple blue print exercises reading related to missing lines, missing views, missing dimension, missing section, identification of surface symbols etc.</p>	<p>Factors and equations algebraic formulae.</p>
<p>14,15</p>	<p><b>2) SHEET METAL WORK -</b>  Use of common hand tools and related with sheet metal work: Steel rule square, snips, sheet metal mallets, punch, hammer stakes etc.  Development from drawing and able to make layout of simple pattern a)  Parallel line method.  b)Radial line method</p>	<p><b>Common Sheet Metal Tools:</b>  Description, types, use etc. Development of simple job viz. Square, cylinder, cone etc.  Marking making templates for pattern making and carpentry work.  Concept of shearing, punching, folding, bending etc.</p>		<p><b>Factors</b> and different types of factorization.   Equations – simple – simulations – quadratic application, construction and solution of problems by equations.</p>
<p>16 &amp; 17</p>	<p><b>CARPENTRY BUILDING WORK</b>  Revision of basics joints related with carpentry building work. Marking and making door frame and door shutter.  Making panel door, glazed shutter and fitting mouldings after fitting glass.  Fitting produce used in door construction.</p>	<p>Introduction about carpentry work involved in building construction.  Types of doorframes, door shutters- description, sizes, uses, advantages and disadvantages etc.  Fittings used in door.  Types of panels used in panel shutter, glazed shutter.</p>	<p>Solution of NCVT (NCTVT) Test papers.</p>	<p>Different forms of energy – heat, mechanical and electrical – examples, conversion from one form to another.</p>

<p>18 &amp; 19</p>	<p>Marking and making window frame and window shutters, use of protection bars. Exercises on roof trusses – Lay out marking roof trusses in reduced scale (Model types)- king post ,queen post etc.</p>	<p>Types of window frame and window shutters. Protection bars: types and uses. Roof trusses: King post, queen post etc. related terms, sizes construction etc.</p>		<p>Geometry</p> <p>Fundamental geometrical definition, angles and properties of angles, triangles, and properties of triangles Pythagoras theorem properties of similar triangle rectangle, square.</p> <p>Rhombus, parallelogram etc. and their properties :- circle and properties of circle, polygons application of geometry to shop problems.</p>
<p>20 &amp; 21</p>	<p>Exercises on simple floor construction and joints used therein. Exercises on partition construction.</p>	<p>Wooden floor: - Brief description, types, construction etc. Wooden partition:- types, size, construction etc.</p>		<p>Mensuration</p> <p>Triangles, square, rectangle, parallelogram, trapezium, trapezoid, regular polygons, circle, hollow circle.</p>
<p>22,23 &amp; 24</p>	<p><b>Repairing practice:-</b> Repair and reconditioning of</p> <ol style="list-style-type: none"> <li>i. Hand tools and equipment</li> <li>ii. Furniture, doors and windows etc.</li> </ol>	<p>Basic principle of repairing work and repairing technique of furniture, door, window, rack etc. Use of Nails, screws angle plate, bracket, nuts, bolts etc. for repairing work. Packing case:-Types, material and tools used. Types of hanging plates, corner plates</p>	<p>Revision</p>	<p>Sector of circle, segment of circle ellipse and fillet. Solid figures – prism, cylinder, pyramid, cone, sphere, spherical segment material weight and cost shop problems.</p>

		etc. used in carpentry work. Economical factors and material estimate.		Practice on simple pocket calculators.
<b>25</b>	Revision			
<b>26</b>	Examination			

**Achievements:**

1. Trainees will be able to operate various wood working machines.
2. Trainees will have an idea about different types of pattern and will be able to make simple wooden patterns like core and core boxes.
3. Trainees will be able to do simple fitting work related with carpentry / woodworking jobs.
4. Trainees will be able to make simple Sheet Metal Operation related to furniture making.
5. Trainees will be able to do the wooden work like doorframes & shutters, window frames & shutters, wooden floor and roof trusses etc. related to building work.

**Trade:- CARPENTER**

**LIST OF TOOLS AND EQUIPMENT**

**A. TRAINEES KIT FOR 16 TRAINEES AND ONE INSTRUCTOR**

<b>S. No</b>	<b>Name of the items</b>	<b>Qty</b>
01	Measuring Tape,3 Meter	17
02	Marking Knife,200 mm	17
03	Carpenter Square,200 mm	17
04	Square, bevel,200 mm	17
05	Carpenter marking gauge.	17
06	Carpenter mortise gauge	17
07	Saw hand, 450mm	17
08	Saw tenon,300mm	17
09	Plane jack metal,335 x50 mm cutter	17
10	Plane smoothing metal, 200x50 mm cutter	17
11	Chisel Firmer(Bevel edged), 6,10,15,20 and 21mm width ( 5 no's)	17
12	Chisel Mortise-6,10,15,mm (3 no's)	17
13	Screwdriver (Cabinet maker), 300 mm	17
14	Mallet medium size	17
15	Hammer Claw,500 gm	17
16	Oil stone (Carborundum) (Universal silicon carbide combination rough and fine), 200 x 50 x 21 mm	17
17	Hand brush for bench cleaning (450mm)	17



## **B. TOOLS, EQUIPMENTS AND GENERAL OUTFITS**

S. No	DESCRIPTION	QTY
01	Rule six,1 metre(in inch & mm)	04 nos
02	Construction scale,1 metre	4 nos
03	Spring caliper inside,150mm	4 nos
04	spring caliper outside,150mm	4 nos
05	Wing compass, 300mm	2 nos
06	Trammel,450mm	2 pairs
07	Sprit Level,300mm	2 nos
08	Rip Saw,600mm	2 nos
09	Cross cut saw,600mm	4 nos
10	Eye shield	2 nos
11	Key hole saw,210mm	4 nos
12	Fret saw frame,150mm	2 nos
13	Compass saw, 350mm	2 nos
14	Adze,1.5 kg	4 nos
15	Trying plane metal,450x60 cutter	2 nos
16	Plane rebate,210mm(adjustable)	4 nos
17	Plough Plane set of 8 cutter, Up to 12 mm width	4 nos
18	Spoke shaves,50 mm cutter	8 nos
19	Plane adjustable circular, 210 mm	4 nos
20	Router plane	4 nos
21	Cabinet scraper,100 mm	4 nos
22	Gauge firmer-6,10,12,16,20 mm	8 nos
23	Gauge scribing-6,10,12,16,20 mm	8 nos
24	Ball peen hammer 600 grams	4 nos
21	Cross peen hammer600 grams	4 nos
26	Screw driver, 450mm	4 nos
27	Screw driver, 210mm	4 nos
28	Screw driver, 150mm	4 nos
29	Pincer, 210mm	4 nos
30	File half round 2 <sup>nd</sup> cut	8 nos
31	File wood rasp,300 mm	8 nos
32	Triangular file slim taper,100&150 mm	12 each
33	Card file (steel)wire brush for file	4 nos
34	Hand drill, 6 mm capacity	8 nos
35	Ratchet brace,210 mm swap	4 nos
36	Hand auger,10 & 12 mm	2 sets
37	Centre bits-6,8,10,12 mm	2 sets
38	Expansion bit sets	2 sets
39	Drill bits- 3,4,5,6,8,10,12 mm	2 sets
40	Counter sink bit rose type,12 mm	4 nos
41	Centre punch, 5 mm	4 nos
42	Oil can,250 ml	2 nos
43	Combination pliers,200 mm	2 nos
44	Plunger saw set / pistol grip type	2 nos
45	Number punch, 12 mm	8 nos
46	Slip stone, 100mm	8 nos
47	Round crow bar with chisel and claw end, 1070x21 mm	2 nos
48	'G' clamp,100 mm	8 nos
49	'G' clamp,150 mm	8 nos
50	'G' clamp,210 mm	4 nos

51	'T' bar cramp, 0.6 meters	8 nos
52	'T' bar cramp, 1.21 meters	4 nos
53	'T' bar cramp, 1.75 meters	2 nos
54	Carpenter vice jaws,210mm	16 nos
55	Saw sharpening vice	2 nos
56	Carving tools set	6sets
57	Safety goggle	4 nos
58	Glass cutter	2 nos
59	Nail punch	4 nos
60	Surface plate(600x600mm)	1 nos
61	Carpenter's work bench (2400x960x800mm)	8 nos
62	Steel locker, 8 compartment with individual locks	2 nos
63	Steel almirah with shelves	2 nos
64	Instructor table (half secretariat)	1 nos
65	Instructor chair	1 nos
66	Stool	1 nos
67	chalk board with easel	1 nos
68	Material rack	1 no.

## **C. GENERAL INSTALLATION AND ACCESSORIES**

Sl. No.	DESCRIPTION	Qty
1.	Portable electric drill,6mm capacity(wolf type)	1 no.
2.	Portable disc sander, 200mm dia.	1 no.
3.	Electric heater, 1000/1500 W	1 no.
4.	Electric blower (portable)	1 no.
5.	Moisture meter	1 no.
6.	Grease gun	1 no.
7.	Spanner double ended set of 14	1 set
8.	Electrical drying oven(small type)	1 no.
9.	Fire extinguisher	1 no.
10.	Fire buckets	2 nos.
11.	Universal wood working machine	1 no.
12.	Tenoning machine (Single ended)	1 no.
13.	Combined Surface and thickness planner	1 no
14.	Circular saw machine, 300mm dia	1 no
15.	Wood turning lathe, 150mm height of centers, 1.75 meter bed.	2 no
16.	Set of turning tools.	2 sets
17.	Mortising machine (Combined hollow chisel and chain type.)	1 no
18.	Bench grinder double end pedestal, 200mm wheel	1 no
19.	Drill machine with drill chuck, 12mm capacity	1 no
20.	Adjustable saw sharpener	1 no
21.	Band saw machine	1 no
22.	Jig saw(wood working)	1 no

**Note:**

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 locker.
2. The trainees 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.