

CARPENTER

SYLLABUS

DRAFT SYLLABUS FOR THE TRADE OF CARPENTER UNDER C.T.S.

PERIOD OF TRAINING- TWO YEARS

Week no.	Trade Practical	Trade Theory	W/shop cal. & Sci.	Engg. Drawing
1	2	3	4	5
NOTE:	All the operations/ skills should be followed by proper demonstration			
1.	familiarisation with the institute , wood working section and wood working machine shop. Demonstration on safety in shop floor and fire fighting equipment, showing of different exercises /jobs done by previous trainees, different Audio-visual aids, visit to library	Importance of the trade in the industrial development of the country subjects to be taught, general safety, causes of accident, fire etc. and their remedies. Duties, responsibilities of the trainees, discipline, different types of leave, recreational, medical facilities and other extra curricular activities of the institute.	Fraction and decimal conversion and application related to the trade units meaning, importance fundamental and derived units CGS and SI system of units their conversion and application related to the trade	Introduction to the engineering.Drg.,Basic concepts. Free hand sketching of lines & plain geometric figures. Free hand sketching of solids, cubes, pyramids.
2.	Identification of common hand tools, demonstration on use of measuring, marking and testing tools.	Introduction to carpentry hand tools - classification, nomenclatures and uses. Measuring,	DO	---DO---

		Marking and testing tools- descriptions, Types size and use. Timber- introduction, types, Structure, sawing of logs, sawing of legs, seasoning of wood- introduction, objectives , Types Methods, materials used.		
3.	Using of different types of saws used for Ripping, cross cutting Oblique sawing using saw horses bench hooks, bench vice ,bench stop, clamps etc.	Saws classification, descriptions, size and use . saw setting and sharpening- method and care	O D	---DO---
4.&5.	Assembling and adjusting a plane, planning a face & end edge. Squaring & end planning and checking their accuracy in each stage. Sharpening a plane blade.	Planes- classification, descriptions, size and use . Grinding & sharpening a plane blade- Process and safety. Chisels- types, size and use. Grinding and sharpening of Chisels, Process and safety.	O D	---DO---
6.	Marking and chiseling along the grain, across the grain, vertically, horizontally. Sharpening of chisels.	Workshop appliances - workbench, bench vice, bench hook bench shop, mitre board - types, size and use. Striking tools- mallet, Hammers- Introduction, classification and use.	Calculation of area of plain regular figures.	Drawing of various lines. Lettering and numbering.
7.	Trenching, Making Halving joints cross,	Introduction to wood working	Mass, weights,	DO

	'T' 'L' corner, oblique Dovetailed half lap.	joints classification, description proportion & use. Growth & structure of timber trees, cross-section of an exogenous & endogenous tree trunk - its parts and their functions.	volume, Density & sp. gr. - explanation illustration, inter relation and calculation of various solids figures.	
8& 9.	Making Temon & Mortise joints through, stopped Barefaced, Housed Haunches, Mitered, Stub, Twin, Double Temon & Mortise.	Temon and Mortise joints- Classification, description- , proportion & use. Identification of timber, conversion & Market forms of timber.	do --- ---	---do---
10.	Marking dovetail joint T through and stopped mitered	description and uses of Bridle joints' Seasoning- Introduction, objective & processes. Natural seasoning- (Water & Air). Proper stacking of timber. methods of finding out moisture content in timber	-do--- --	----do---
11& 12	Making dovetail joints & single, common through, Lapped, Secrets Mitered Using dovetails template.	Dovetail joints- classification, descriptions, proportion & use. Artificial seasoning methods- steam-heated kiln, Furnace Kiln, Progressive kiln their description advantages & dis-advantages.	Ratio & Proportion Revision & application in related shop problems. Displacement speed, Velocity, Acceleration- definition, explanation, illustration, relation,	Conventional representation/symbols of various engineering materials.

		Girdling methods of seasoning process & advantages	calculation related to shop problems.	
13	Making broadening joints-simple butt, Rebated Butt, Pocket screws Butt etc.	Broadening joints-description, proportions & use. Defects & diseases of timber-causes & remedies.	--do---	---do---
14	Making housing joints-through stopped, barefaced & dovetailed. Making miscellaneous Framing joint –Land Butt, End lapped & mitered.	Housing joints-description, proportion & use preservatives & preservation of timber. Description, proportioned & uses of different End butt joints . preparation & application of different types of glues-Animal, casein, contact synthetic resin etc.	--do---	----do---
15	Making lengthening joints different types of scarf joints.	Types, proportion construction and uses of scarf joints. Properties of timber and qualities and of good timber.	-do---	---do---
16	Practicing drilling and boring (by hand) of different sizes vertical and horizontal & counter-sinking and counter boring.	Tool bits-types, auger , hand drill, breast drill ratchet. Brace & hand Auger-their description sizes and uses.	Application of square, cube, square root & cube root in trade related problems.	Free hand sketching of different carpentry hand tools.
	Curve cutting, curve planning, molding and grooving.	Description, types, sizes and uses of Bow saw coping saw, fret saw, Compass plane , molding	Newton's laws of motion-statement, explanation, force, effects of force, units	

		planes, plough plane rasp Files and spoke shave.	and types.	
17 to 21.	Wood working machine acquaintance with machine parts their functions and performing different operations- safety. i) i) Band saw – removing, coiling and mounting blade . Ripping, cross cutting , curve cutting , saw setting and sharpening/ grinding practice.	Wood working machines types, sizes , parts and their functions and operations and safety precautions and maintenance. Common hardware nails, wood screws, hinges , hasp and staples, tower bolts and other fittings – types, sizes and use.	----do----	
	ii) ii) Circular saw- Removing and mounting of saw blade. Ripping, cross cutting, mitering, rebating grooving, beveling Tenonings etc. practice.			
	iii) iii) Practicing – surfacing , edging , chamfering beveling thickening etc. on planning machine . wood planning machine. Mortising machines.			

	iv)	iv) Practicing plane , taper & form turning , using turning tools on wood turning lathe			
	iv)	iv) Grinding of different types of tools- chisels, plane blade etc. on pedestal grinding machine, sharpening of saws & cutter used in wood working machine	----- do-----	Single algebra formula e.g. (a+b) ² , (a- b) ² , a ² -b ² etc. friction definition, illustration, types , effects, minimising frictional effect	-----do-----
	v)	v) Drilling by different bits & counter - inking on drilling m/o , practicing of , portable Elect. Drill			
	vi)	vi) Mortising by combined Hollow chisel & chain mortiser, Grooving by chain mortiser			
	vii)	vii) Tenoning by single Ended tenoner			
22		Visit to Industrial Establishment.			
23 to 25		Making door frame & shutter with rebated butt joints,	Door frame shutters - types , size , use and	-----	

	Hinging the shutter with the door frame, Making of a paneled door , hinging , fitting the door bolt & door lock in the frame	constructional details Windows-type , use & constructional methods. Synthetic carpentry materials Compound fiber board	do-----	
26	-----do-----	Compound saw dust Board Compound saw dust & plaster of Paris	Factorization-Simple exercises related to the trade. Work,. Power, Energy H.P. , B.H.P. & 1 HP- definition , explanation, illustration related calculation	
27 & 28	Making small articles like a tea - tray , office , tray, box with sliding top hasp and staple cup board lock etc.	Wooden floor , roof & partition- Brief description , related terms, sizes, joints used	----- do-----	-----do-----
29 & 38	Making simple wooden furniture like notice board , office rack , stool, bench , centre table, writing table with drawer & lock, meat safe, cup board etc. Job dressing sand papering ,staining, filling etc. for polishing , varnishing, & painting on finished articles	Description , size & uses of plywood & laminated insulation fiber/synthetic board, job dressing, putting , sand papering staining of filling . Preparation & application of wood finishing materials- finishing materials - French polish, wax polish, paints, varnish,	Simple & simultaneous equations-Basic concepts & related problems Elasticity, stress & strain, Modulus of Elasticity - Basic concept, illustration, importance \ & related calculation.	Isometric & oblique drg. Converting isometric to oblique. Dimensioning technique & application

		Lacquer & lacquering		
39	Repairing & reconditioning of hand tools, equipment	Brief description, size, type & use of Miscellaneous hand tools- screw- driver, spanner, clamps, pincer crow bar with chisel & claw etc.	Basic Geometry common geometric figures- Angle ,Triangle ,Polygons, circles - Definition, type, illustration & properties & shop calculation.	Orthographic Projection Basic concept, importance & application.
40	Identification of pattern making hand tools. Lay out of simple solid pattern on the lay out board and making pattern as per lay-out.	Introduction to pattern makers hand tools. Patterns layout, types, solid ,split, multipiece, skeleton etc., pattern allowances shrinkage, Draft, Machining & use.	Heat & Temperature- Explanation, relation, unit. Effect of Heat, Expansion of solids, Co-eff. Of linear expansion.	-do-
41& 42	Lay out of split pattern, marking and making a split pattern making of wooden dowels for above patterns with self core & prints. Preparing core box and painting the pattern, core box etc. as per I.S. specification.	Dowel type, size & use core & core prints, type & use colour code as per IS specifications. Use of paints on pattern core, core box, core prints etc.	Pythagorous Therom- Application, Calorimetrv- Quantity of heat/specific and Latent heat, Heat gain and Heat loss -Basic concept, inter relation and application	Development of solids.

ALLIED TRAINING – SIMPLE FITTING

WORK -3

43.	Familiarization with the fitting hand tools- hacksaw, punch, hammer , cold-chisel,files, marking block, surface plate scriber, etc	General safety in fitting shop. Marking tools, steel rule, try square, scriber, dividers, calipers etc, surface plate, Marking block etc,	-do----	--	o-----	----d
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	identification, use and care.	description, size, use and care.		
44 & 45.	Chipping, filling, marking for making hanging plate, corner plate, angle plate, used for wooden furniture.	Vice clamps, hacksaw, punch, hammer, cold, chisel, files-types, sizes, use & care. Tap & die, drill bits -types, size, use & care. Corner plate, angle plates etc. used in carpentry trade- uses. Nut & bolt, washer machine screw etc. -type, size, is specification & use.	----do---	--do----- --

ALLIED TRAINING - SIMPLE SHEET

METAL

46.	Familiarization with common hand tools- snips, sheet metal mallets, punch, hammer stacks etc. Development from drawing lay out of simple pattern.	Common sheet metal tools- description , type, size & use. Reading of development drawing of simple job & system of lay out square, cylinder, cone etc.	Menstruation- area perimeter of triangle, rectangle, circle etc. volume & surface area of solid object related calculation	---do--
47 & 48.	Cutting, folding, forming, bending & making simple items useful in carpentry trade, simple soldering, brazing and welding.	Making & making template for carpentry work. Shearing, punching, folding, bending etc., sheet metal operation- process, use & care. Soldering, brazing and welding- basic principles, process, use & care.	Electricity- AC/DC, Basic concept, safety & application Uses of Fuses, Switches, conductors and Insulators and Safety involved.	
49&50	Repairing old furniture, door & window etc.	Common Indian timbers description source & selection for different work.	do--- ----	o--- ----d
51&52	RE VISION AND TEST			
Week No.	Trade Practical	Trade Theory	Workshop Cal. & Science	Engineering Drawing
Furniture & Cabinet Making				
53	Practice with laminated sheets- blackboards, plywood	Types of Timber used in different furniture making.	Geometrical problems on Angles, Triangles,	Drawing of different Wooden Joints (Freehand

			Circles related to the trade.	sketching)
54	Veneering and its use in Furniture & Cabinet making.	Glues and synthetic adhesive, Basic need for modern furniture design for office, school, showroom, dinning hall, bedrooms Library etc.	Physical Properties- Tenacity, malleability, Ductility, Elasticity, Brittle-ness, Hardness, Toughness, Cohesiveness & adhesiveness -Concept, Illustration and use.	----do---
55	Carving work in the Preparation of dowels (Wooden & metal)	----do---	do---	----do---
56.	Making of different types of joints. Making & fitting of Cabinet	---do---	do---	----do-
57.-58	Fitting of hinges. locks handles, fasteners.	Combination of wood and metal in furniture making, special tubular.	do---	----do-
59.-60	Making different types of furniture- tools, chairs, table, Sofa, Almirah.	Hardware used as nails, screws, types sizes, uses Nuts, bolts, washers, locks hinges, Hisp & Stable, tower bolt door handle other fittings.	do---	Drawing of different types of fittings used in making furniture.
61.	Manufacture of Cabinet, bookcase, and rack, Almirah.	Wood surface & finishing materials, sand papers, Staining, varnishing, polishing, material, methods & case etc.	Use of Calculator. Physical properties & uses of Rubber. Plastic, Fiber Sunmica, glass	Freehand sketching of various furniture.
62.	Making of drawers, cupboard, and diff. Types of fittings.	-----do---	do---	----do-
63.	Preparation of surface with plan, scraper and sand paper.	Common sheet metal tools-description, shearing, surface grinder punching, folding, bending operations etc.	do---	----do
64.	Varnishing,	Preparation of bill of	----	----do-

	polishing including polymer group & Painting.	materials, estimating & costing.	do----	---
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BAMBOO & CANE CRAFT				
65. to 66	Splitting the bamboo into strips in assorted width & thickness. Treating and dyeing of strips property.	Cane & Bamboo- Introduction Structure & Physical.	do--- ----	Drawing different Bamboo joints, Weaving Design. ----do---
67 to 68	Weaving of Bamboo mats for pressing work. Pressing in dies and finishing canning practice on slab & back of Chairs.	Factors to be considered for designing of artistic and fancy types of baskets, boxes, tray, lampshades etc.	Trigonometry -Sin, Cos, tan Formulae. Effect of force on materials and relate safety factors.	Detailed Assembly drawing of different types of furniture made of bamboo/cane.
69 to 70	Making the following fancy items out of Bamboo- trays, flowers, baskets, lampshades, Table lamp, Huts, Magazine rack.	Different types of Cane & bamboo, there processing and splitting into strips.	--- -do-----	---do-- -
71 to 72	Weaving of basket & Stool/chair, sofas with center table out of cane and finishing.	----do----	---do---- --	---do-- -
73 to 74	Practice on splitting of cane, into strips in assorted width & thickness. Weaving of basket & Stool/chair, sofas with center table out of cane and finishing.	Art/methods of making cane/bamboo tray, lampshades, table lamp etc.	Solution of problems on heights & distance.	Drawing of different cane joints, knee joints, fancy articles, Sofa, Center table, Chair, flower vase stand.
INTERIOR DECORATION				

75-77.	Preparing of charts & Layout of Drawing Room, showroom, office room. Reproduction of idea on paper through drawings.	Furniture types & layouts Importance of built-in, dual purpose & cantilever type. Suitability of furniture for drawing room/living room, children room, kitchen room, and utilisation of space & Aesthetic value. Color Scheme.	Solution of problems on heights & distance.	Practice on water painting. & oil painting
78-79.	Preparation of models on the above. Practice on coloring/painting.	Color theories -Hue, Value & chrome; warm & cool color, light & Heavy color. Color schemes & their application. Factors affecting color scheme.	---- do----	to design one drawing hall showing the Interior Decoration.
80.	Practice on Illumination & lighting different areas.	Lighting-Effects created and types suitable for various activities and different areas.	Simple levers & machines Mech. Advantage, velocity ratio efficiency-Explanation & application.	Lay out drawing of Drawing room, office room, show-room alongwith furniture & fittings.
81-82.	Decoration of temporary showroom. Identification of various upholstery materials & draperies Measuring and cutting the materials to size & stitching, Boutique printing.	Influencing the choice of furniture Furnishing materials for upholstery, curtain-its suitability in terms of room/space windows. Drapery fabricselection, color, design & weave & introduction to Boutique.	--- do---	---do- -

83.	Practice on care & cleaning of carpets & Draperies, treatment of stains.	Use of materials for making flooring, ceiling (false), wall paneling-with decorative lamination materials and its suitability.	- ---do--	---do---
84.	Practice on treatment & preservation of flowers & plants.	Flower-Arrangement-Basic principles, brief introduction of Ikebono.	--- ---do	---do-
85.	Fixing acoustic boards and testing its effectiveness Practice on acoustic treatment.	Acoustic treatment, sound proofing-the process of carrying out acoustic treatment.	--- ---do	---do
86 & 87.	Visits & Video show ...	-	-	-
88.	Holding of pipe, Pipe cutting with hacksaw & External threading of MS Tube/conduit pipe & Polyphone pipes with taps & dies.	Pipes-Introduction, specification/size/ I.S. Norms), Material. Holding devices for pipes, types precautions to be observed while holding and cutting pipes. Hacksaw blade for pipe cutting, Relation between number of teeth on the blade & thickness of the pipe. Pipe thread-forms, size, taps and dies for pipe threading description size, Method of use. Lubrication & safety.	Solution of Triangle. Effect of alloying elements in the properties of C.I. and Steel.	Symbols of pipe fitting, valves, Drawing of different sections of pipes.
89.	Bending of M.S. Tube/conduit pipe, pipes to different angles.	Pipe bending-Methods, Equipment required, safety.	o--- ----d	----do---

90 to 91.	Making different pipe joints-plain, Elbow, Tee etc. And testing the leakage. Making pipe joints, between GI & Polyphone pipes	Pipe joints-types, Materials used, leakage-testing methods.	do-- ----	Drawing of different pipe fitting elbow T straight and reducing sockets short pieces etc.
92 to 93	Setting with clamps and aligning of pipes-both GI & politeness. Plugging of pipes, contorting of flow of liquid by using valves.	Clamps used for pipe setting, type, size and special care for setting. Sagging of pipes Methods of avoid it. Valves, Plugs-type, size, function and safety for fitting.	Calculations of volume of Timber and charges, painting surface. Heat treatment of metals method & effects.	
BASIC WELDING				
94.	Preparing edges for welding of various joints.	Safety and health hazier in Electric & Gas welding and cutting. Glossary of terms related to welding & Cutting.	-do--- --	Welding symbols. Welding joints.
95 to 96.	Making single Vee, Butt joints & Lap joint on M.S. sheet (5 mm) by arc. Making fillet & Corner Welding joints on M.S. sheet 6 mm by Arc. Gas welding with external filler.	Assembly of Gas welding & Cutting equipment. Care and maintenance. Types of Arc welding m/c. Working principle, care & maintenance. Selection of Electrodes (size) and current during welding.	--do--- --	---do-- -

97.	Brazing & Soldering practice on G.I., Brass and aluminum by Gas.	Welding, brazing & soldiering of Aluminum, Bras, bronze & Copper.	Reading & platting of simple graphs. Physical Properties and uses of brass, bronzes solder, bearing metal, timber. Plain Carbon & Alloy Steel.	----do-- -
98.	Making single Vee Butt joint and Lap joint on M.S. sheet (5 mm) by the gas. Making Fillet `Corner Welding joints on M.S sheet 6 mm by Gas . Making Fillet weld between sheet & Pipe by Gas.	Types of weld joints, importance of Arc length & Arc characteristic. Methods of joining and fitting tubes by welding & brazing. Application and advantages of welding pipes.	----d o---- o---- -----d	Blue Print Read.
99.	Welding of G.I Pipes by Arc Welding of G.I. Pipes by Gas	Arc welding defects, their causes and remedy.	Definition of logarithm-Characteristic & Mantissa. Use of: logarithmic table. use of Antilog table.	----do- --

GLASS WORK

100 T o 1 0 1 .	Cutting, Shaping, grinding etching of glass.	Different types of glass & mirrors.	Determination of Logarithm & Anti logarithm of numbers Multiplication & Division involution using Log table. simplification using log Estimation of requirement of materials & calculation of wastage.	Blue Print Reading of Doors, Windows, Furniture & Cabinet.
102.	Fitting of glass & Perspex sheet in Windows mirrors.	Cutting, shaping, Etching of glass.	do--- ----	---do-- -
103.	Visit to Industry.			
104.	Revision & Final Test.			

**LIST OF TOOLS & EQUIPMENT FOR BATCH OF 16
TRAINEES/ ONE UNIT**

CARPENTER

TOOL KIT

SI. NO.	DESCRIPTION	QUANTITY
1.	Rule six fold- 1 meter (inch & mm)	16 Nos.
2.	Try Square (Metal) – 200 mm	16 Nos.
3.	Bevel Square wooden stock 225 mm blade	16 Nos.
4.	Marking Knife 200 mm	16 Nos.
5.	Marking gauge	16 Nos.
6.	Mortise gauge	16 Nos.
7.	Metal Jack Plane 350 mm X 50 mm cutter	16 Nos.
8.	Metal Smoothing Plane – 225 mm X 50 mm cutter	16 Nos.
9.	Hand saw- 450 mm	16 Nos.
10.	Tenon saw = 300 mm	16 Nos.
11.	Firmer Chisel 25mm, 15mm, 10mm, & 6mm	16 Nos.
12.	Bevel edge chisel-25mm, 15mm, 10mm, & 6mm	16 Nos.
13.	Mortise Chisel-10mm, 6mm	16 Nos.
14.	Wooden Mallet	16 Nos.
15.	Claw hammer 200mm	16 Nos.
16.	Screw Driver (Cabinet maker) 300mm	16 Nos.
17.	Wood Rasp (Half round) bastard 250mm	16 Nos.
18.	File half round 2 nd cut 250mm	16 Nos.
19.	Pincer – 250mm	16 Nos.
20.	Nail Punch	16 Nos.
21.	General Outfit	
1.	Measuring Tape 2 Meter	1 No.
2	Construction Scale 1 Meter	4 Nos.
3.	rip Saw 600 mm	4 Nos.
4	Cross 0 cut saw 600 mm	4 Nos.
5.	Key hole saw – 150 mm	2 Nos.
6.	Compass saw-300 MM.	4 Nos.

7.	Trying Plane (Metal) 450 mm	2 Nos.
8.	Rebate Plane 250 mm	4 Nos.
9.	Plough Plane with set of 8 cutters up to 12 mm width	4 Nos.
10.	Metal spoke shave-50 mm cutter	4 Nos.
11.	Moulding Plane set	4 sets
12.	Claw hammer 500 gm	4 Nos.
13.	Ball panehammer 500 gm	4 Nos.
14.	Cross Pane hammer 200 gm	4 Nos.
15.	Straight pane hammer 200 gm	4 Nos.
16.	Screw driver (London pattern) 250 mm & 450 mm	4 nos. each
17.	Card file (Steel) wire brush	4 nos.
18.	Hand drill 6mm capacity	4 nos.
19.	Ratchet Brace 250 mm sweep	4 nos.
20.	Hand auger-25,20,12,8, mm	2 Nos. each
21.	Center bit-12,8,6 mm	2 Nos. each
22.	Twist drill bit, 12,10,8,6 mm	2 Nos. each
23.	Rose countersink bit-12 mm	4 Nos.
24.	Breast drill 6mm capacity	2 Nos.
25.	Center Punch	4 Nos.
26.	Plunger saw set/Pistol grip type	2 Nos.
27.	Number Punch 12 mm	2 set
28.	`C' clamp-250, 150, 100 mm	2 Nos. each
29.	`T' bar cramp-1.75 meter 1.25 meter 0.6 meter	2 Nos. 2 Nos. 2 nos.
30.	Carpenter vice 250 mm jaws	16 Nos.
31.	Expansion bit 25 to 75 mm	` 2 Nos.
32.	Saw sharpening vice 250 mm jaws	2 Nos.
33.	Spring caliper inside 150 mm	4 Nos.
34.	Spring caliper outside 150 mm	4Nos.
35.	Wing compass 300 mm	4 Nos.
36.	Trammel points	2 pair.
37.	Fret saw frame 150 mm	2 Nos.
38.	Plane adjustable circular 250 mm	4 Nos.
39.	Router Plane	4 Nos.
40.	Snip straight 200 mm	1 No.
41.	Round crow bar with chisel and claw end 1070 X 25 mm	2 Nos.
42.	Glass cutter	2 Nos.
43.	Goggles pair	2 Nos.
44.	Surface plate 600 x 600 mm	1 No.
45.	Carpenters work bench 2400 x 900 x 800 mm height	2 Nos.
46.	Steel Lockers, 2 compartments with individual locking arrangement 1900 x 910 x 420 mm depth	2 Nos.
47.	Steel Almirah with shelves 1900 x 910 x 420 mm depth	2 Nos.
48.	Instructor Table (half Secretariat)	1 No.
49.	Instructor Chair	2 Nos.
50.	Instructor lecture high stool	1 No.
51.	Stool	1 NO.
52.	Chalk board with easel	1 No.
53.	Material rack	1 No.
54.	Paring gouge 6, 10 & 15 mm	4 Nos. each
55.	Firmer gouge 6. 10, 15 mm	4 Nos. each

GENERAL INSTALLATION & ACCESSORIES

SI. No.	Description	Quantity
1.	Combined surface & Thicknesser	1 No.
2.	Rise & fall circular saw machine (300 mm dia blade)	1 No.
3.	Wood Turning lathe 150 mm height of centers, 1.75 meter bed motorised complete with a set of 8 nos. turning tools	2 Nos.
4.	Tenoning machine (Single ended)	1 No.
5.	Mortising machine (Combined hollow chisel & chain)	1 No.
6.	Bench Grinder 200 mm wheel D.E. Pedestal	1 No.
7.	Drill machine 12 mm capacity	1 No.
8.	Drill chuck 12 mm capacity with key	1 No.
9.	Portable electric Drill 6 mm capacity with key (wolf type)	2 Nos.
10.	Portable disc sander 200 mm dia	1 No.
11.	Electric Blower	1 No.
12.	Electric Heater 1000/1500 w	1 No.
13.	Moisture Meter	1 No.
14.	Electrical Drying Oven (Small type)	1 No.
15.	D.E. Spanner (Set of 14)	1 set.
16.	Band Saw machine (Narrow type)	1 No.
17.	Electric Brazer (For brazing Band saw blade	1 No.
18.	Universal wood working machine	1 No.
19.	Grease gun	1 No.
20.	Fire Extinguisher	2 Nos.
21.	fire BUCKET	4 Nos.
22.	Adjustable Saw sharpener	1 No.

Note :

1.	No additional items are required to be provided to the 2 nd unit.
2.	The trainees for the main trade will be sent to the different sections for allied trade training. No sparate tools and equipment will be required for allied trades.

WELDING

Trainees Kit :

1. 1.	Gloves pair leather	16 Nos.
2.	Shield fitted with glass	16 Nos.
3.	Fitted with Goggles pair welders	16 Nos.
4.	Hammer chipping 0.25 kg (Scaling)	16 Nos.
5.	Wire brush 15 cm X 3.7 cm	16 Nos.
6.	Lighter	
SHOP OUTFIT		
1.	Gas Welding set with all accessories	2 Nos.
2.	Arc welding set	2 Nos.

PIPE FITTING

Trainees Kit :-

1.	Hacksaw frame 12"	16 Nos.
2.	Hacksaw blade ½"	16 Nos.
3.	Hacksaw blade 1"	16 Nos.
4.	File Flat Second cut	16 Nos.
5.	Chisel 12 mm x 150 mm	16 Nos.
6.	Hammer	1 No.

SHOP OUTFIT

1.	Pipe wrench	4 Nos.
2.	Chain pipe wrench	4 Nos.
3.	Spanner (appropriate size)	4 sets
4.	Hack saw	4 Nos.
5.	Tap wrench (Adjustable & fixed)	1 set
6.	Die holder	8 Nos.
7.	Taps & Dies as per requirement	2 Nos. each
8.	Pipe Vice 100 mm	2 Nos.
9.	Swivel base vice 100mm	2 Nos.

BAMBOO & CANE CRAFT

1.	The Whole Bamboo splitter
2.	Shaping chisels
3.	Hand vice
4.	Hand drill with bits
5.	Tennon Saw
6.	Hacksaw Frame with Blade
7.	Bill Hook
8.	Hand Slick
9.	Mallet

GLASS WORK

Trainees Kit

1.	Glass cutting tool (Diamond cutter)	16 Nos.
2.	Scriber	16 Nos.
3.	Grinding Stone	16 Nos.
4.	Claw hammer 150 mm, 100 gm	16 Nos.
5.	Glass Cutting pliers_	16 Nos.

INTERIOR DECORATION

1.	Knife file 4"	16 Nos.
2.	Safe edge file 4"	16 Nos.

3.	Round file	16 Nos.
4.	Triangular file 4"	16 Nos.
5.	Knife 4"	16 Nos.
6.	Snip 8"	16 Nos.

SYLLABUS FOR THE TRADE OF CARPENTER UNDER APPRENTICESHIP TRAINING

SCHEME

PERIOD OF TRAINING-3 YEARS

BASIC TRAINING

NOTE:- The content of the syllabus under Craftsmen Training Scheme to be followed in the first two year (Basic 'Trg.) of Appr. Trg. Scheme.

SHOP FLOOR TRAINING (3rd YEAR)

A. A. PRACTICAL:

List of operations/skills/jobs given below are not necessary to be performed in order in which they are listed.

1.	Revision of basic skills/operations done in the first two years.
2.	Introduction to safety precautions in the shop floor.
3.	Using of special hand tools e.g. Bow saw, Fret saw, key hole saw, panel saw, coping saw, cutting gauge, parcel gauge, Trammel points, trying plane, compass/circular plane, Block plane, Fillster plane, router plane, Torching plane, Molding plane, Expansion bit, Bevel edge chisel etc.
4.	Grinding and sharpening of chisels and plane blades.
5.	Refitting, Hard saws- Tapping, Reshaping, Dressing, Setting and sharpening of saw blades.
6.	Proper stacking and preserving of different types of timber.
7.	Making of different Broadening, lengthening and framing joints including double tenon, twin tenon, Task tenon, clogged dovetail, splayed dovetail, Tongue & grooved joints.
8.	Marking and making tea tray, office tray using splayed dovetail joint, stool, book shelves, racks, tables with drawers, different cupboards, chairs, different types of tables e.g. center table , dinning table, dressing table etc.
9.	using of hardware, nailing ,screwing , fitting of locks, handles. tower bolts, flush bolts, castors, hasp and staples, door ring, hinges- butt hinge, continuos butt flap hinge, parliament hinge etc.
10.	Making door and an window frames with their different shutters, use of lockers.
11.	Layout and us e of joiners rod.

12.	Layout and making of partition-temporary, stud etc.
13.	Construction of timber floor, stair case.
14.	Layout and construction of different roofs with ceiling.
15.	Use of wood working machines and their accessories circular saw, band saw, planner and thickener , mortiser (both chain and hollowchisel) tenon (single ended and double ended), fret saw spindle molder universal wood working machine , grinding machine(D.E.pedestal),adjustable saw sharpener wood turning lathe, drill machine etc,
16.	Construction of shuttering i. e.form work.
17.	use of plywood, laminated board, fiber and insulation board synthetic board etc.
18.	job dressing- scraping, sand papering, nailing, staining, filling, for French polishing, wax polishing, varnishing, lacquer finishing, painting.
19.	Using of different portable power hand tools.
20.	Working to simple architectural drawing.
21.	Brazing of broken band saw blade.

ALLIED TRADE TRAINING:(4 WEEKS EACH)

BLACK SMITH WORK :-Each apprentice must learn to make some carpentry tools- chisel nail punch, bending angles, brackets, marking knife etc.and also learn the process of annealing , hardening and tempering of carpentry tools etc.

Sheet metal work and fitting work – Revision of work as already done in the first year.

B.Related instruction :(trade theory)

The content of the syllabus for first year training should be repeated. In addition they should learn following lesson/ topics:--

1. Trade theory

1	Wood work—classification
2.	Safety rules---Body care tools and machine care, shop courtesy.
3.	Firefighting – Methods of putting out the fire –Fire appliances.
4.	Common hand tools- classification description, types, sizes, and uses and their maintenance.
5	Workshop appliances-work bench, bench stop, bench hook, miter board, meter box, shooting board, pin block, hold fast, bench vice etc.
6.	Growth & structure of timber trees- Cross section of an exogenous tree trunk- its parts & their functions, structure of hard & soft wood, comparison between heart wood & sapwood.

7.	Property of wood- physical properties, mechanical properties, chemicals composition of wood .
8.	Conversion of timber- identification of maturity of tree, methods of felling tree, methods of converting logs into timber- parallel, quarter radial, tangential sawing, boxing.
9.	Market forms of timber- names & sizes of their cross section.
10.	Seasoning-natural seasoning & artificial seasoning.
11.	Air seasoning of saw timber- advantages, shed foundation method of timber stacking, seasoning time, advantages & disadvantages.
12.	Artificial seasoning of sawn timber-structure & internal arrangements of steam heated kiln furnace kiln direct heated & indirect heated, progressive kiln advantages & disadvantages of kiln seasoning, grinding.
13.	Defects of timber – During growth knots, grains during seasoning-checking, splitting, shapes, warping, defects caused by insects, disease of timber- wet & dry rots, druseiness, foxiness, detainees etc. in of decayed timber & its remedy qualities of good timber.
14.	Preservation of timber-surface treatment, dipping treatment, pressure treatment, osmoses, process, butchery process, chariness process.
15.	Preservatives-types characteristics.
16.	Joint in wood working- Broadening-simple butt, dowethed butt, pockets screw butt, secret screw butt, rebated butt, tongue & grooved, further tongue & grooved etc.
17.	Lengthening joint- simple scarf, splayed scarf, table scarf, hammer head key joints.
18.	Framing joints – Tenon & mortise housing joints, dovetail & miscellaneous framing joints – their types, proportion, use etc. in details.
19.	Common glues – animal, fish vegetable, contact, blood alumna synthetic resinglues – their characteristics, preparation, application etc.
20.	