

Syllabus for the subject

of

**TRADE THEORY- I
&
TRADE PRACTICAL – I**

Under

CRAFT INSTRUCTOR TRAINING SCHEME (CITS)

CARPENTER TRADE

Re-Designed in

- 2014 -

By

**Government of India
Ministry of Labour & Employment
Directorate General of Employment & Training (DGE&T)**

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A. RATIONALE

Success & Sustainability of any Training System depends upon given other things, availability of good quality instructors. An Instructor should possess good trade skills to impart skill training. To cope up this quality possession of trade skills is imperative.

Ability to understand and interpret the course content is essential to perform a job / task of Engineering Trades. It is the skills, Knowledge and Attitude which enables comprehending the given job and subsequent planning to complete the task/job. Thus it is imperative for any trade to instructor to have skill so that same can be transferred.

For an instructor it is essential to have in depth knowledge set which enables analyzing the given job and subsequent detail planning. To transfer skill the practical know how is most important criteria as in ITI system skill is the ultimate requirement. To perform a task/job both theoretical and practical knowledge are very much needed. Thus Trade Technology is regarded as basic/hard skills which are base of all skill based training.

Recognizing this importance maximum weight age has been given to the Trade Technology in all Engineering Trades in Craft Instructors Training Scheme (CITS) under NCVT.

B. GENERAL INFORMATION

1. Name of the Course : Craft Instructor Training
2. Duration of Instructor Training : 1 Year (Two semesters each of six months duration).
3. Subjects covered in the Semesters : Detailed in Section - C
4. Name of the Subject : **TRADE THEORY – I & TRADE PRACTICAL- I**
5. Applicability : **CARPENTER TRADE**
6. Examination : AITT to be held at the end of each semester.
7. Space Norms : (a) One class room of minimum 30 sq.m. area having Minimum width of 5 m.and with 6000 lumen
(b) Workshop : 120 sq. meter having minimum width of 8 m. and with 30000 lumen
The electrical equipments of Class room should conform to minimum 3 star Building energy rating per Bureau of Energy Efficiency (B.E.E.)
8. Power Norms : (a) 1 KW for Class room
(b) 10 KW for Workshop
9. Unit strength (Batch Size) : 20 Trainees
- 10.Entry qualification : Diploma/Degree in Mechanical/Production / Industrial Engineering from AICTE recognized Board / University.
OR
National Trade / Apprenticeship Certificate in the Carpenter trade

11. Trainers' Qualification : Diploma or Degree in Mechanical / Production / Industrial Engineering from AICTE recognized Board / University with five / two years experience respectively

12. Desirable : Passed National Craft Instructor Training course in same or relevant trade.

In case of two units, one trainer must be Degree in Engineering.

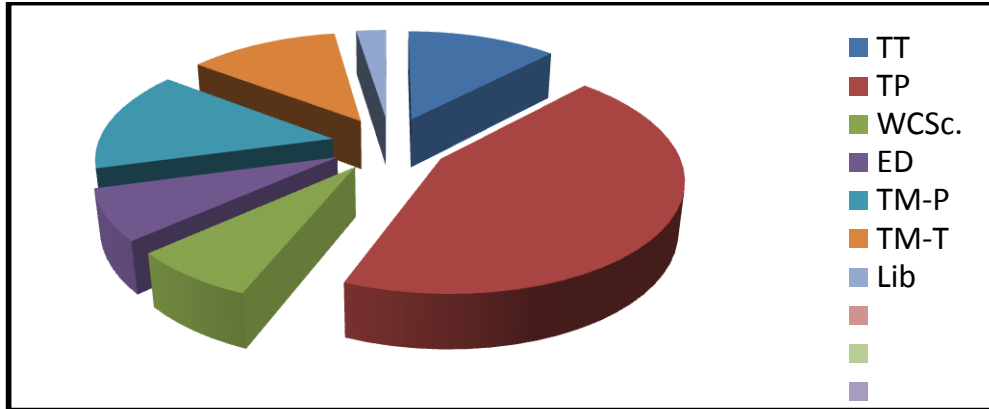
C. SEMESTER WISE ALLOTMENT OF TIME & MARKS AMONG THE SUBJECTS FOR CITS

	SUBJECTS	Hrs. / Week	% of time allotted	Marks	Sessional	Full Marks	Pass Marks		
							Exam.	Sessional	Total
First semester	Trade Practical – 1	20	50	200	30	230	120	18	138
	Trade Theory - 1	6	15	100	20	120	60	12	72
	Workshop Cal. & Sc.	6	15	50	-	50	30	-	30
	Engineering Drawing	6	15	100	-	100	60	-	60
	Library	2	5	-	-				
	TOTAL for Sem. - I	40		450	50	500	270	30	300
Second semester	Trade Practical – 2	16	40	200	30	230	120	18	138
	Trade Theory - 2	4	10	100	20	120	60	12	72
	Training Methodology - Practical	12	30	200	30	230	120	18	138
	Training Methodology - Theory + IT	6+2	20	100	20	120	60	12	72
	TOTAL	40		600	100	700	360	60	420
	GRAND TOTAL	80		1050	150	1200	630	90	720

Hourly Distribution

TOTAL: 1200 marks for 2 semesters Pass marks: 720

Subject	Time in %	Marks in %
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Trade Practical	45	38
Trade Theory	12.5	20
Total for Trade	57.5	58
Training Methodology (Practical)	15	19
Training Methodology (Theory) + IT	12.5	10
Total for Training Methodology & IT	27.5	29
Engineering Drawing	7.5	12
Workshop Cal. & Sc.	7.5	4
Library	2.5	-

D. SYLLABUS FOR THE TRADE: CARPENTER CRAFT INSTRUCTOR TRAINING SCHEME

Note: During the discussion of any machine tools, related precautions and safety measures should be discussed.

For Semester - I

Trade Theory				Trade Practical		
Sl. No.	Topics	Hours	Marks	Topics	Hours	Marks
1.	<u>Safety precautions:</u>	06	5	<u>Introduction to Craft Instructor Training & Familiarization with the workshop:</u>	20	-
2.	<u>Saws and the Planes Different plane:</u>	12	5	<u>Sawing practice : Hand Tools and portable power tools - curve cutting saws Planning practice</u>	40	20

3.	<u>Growth of timber trees :</u> <u>Paring tools :</u>	12	10	<u>Chiseling Practice</u> <u>And multiple chiseling practice</u>	40	15
4.	<u>Seasoning of timber-</u>	06	10	<u>Application of boring tools:</u>	20	10
5.	<u>Wood working joints :</u>	12	15	<u>Joint practice:-</u> <u>Demonstration and making framing joints :-</u>	40	30
6.	<u>Widening joints:</u>	06	5	<u>Making Widening joints:</u>	20	20
7.	<u>lengthening joints :</u>	06	5	<u>Making lengthening joints :</u>	20	20
8.	<u>Striking tools-</u> <u>Impelling tools-</u> <u>Miscellaneous tools –</u> <u>Conversion of timber.</u>	18	15	<u>Fixing of Metal Fittings in jobs :</u>	60	10
9.	<u>Fiber board-</u>	12	5	<u>Application of laminated sheet-</u> <u>Application of block boards –</u> <u>Application of sun mica sheets-</u>	40	25
10.	<u>Veneers and Ply Wood</u>	12	10	<u>Application of plywood and veneers</u> :	40	20
11.	<u>Wood particle board-</u>	12	5	<u>By using of plywood and Other surface Treated (OST) sheet :</u>	40	15
12.	<u>Carving Hand Tools :</u> <u>Preservation of timber-</u>	12	10	<u>Using carving hand tools.:</u>	40	15
13.	<u>Revision</u>			<u>Revisions / Project work / Repairing work</u>		
14.	<u>Final trade test</u>		100	<u>Final trade test</u>		200

SEMESTER -I

TRADE TECHNOLOGY

WEEK NO.	TRADE PRACTICAL	TRADE THEORY
1	<p><u>Introduction to Craft Instructor Training & Familiarization with the workshop:</u></p> <p>Introduction to Craft Instructors Training Course and importance of Craft Instructors Training Course in India</p> <p>Familiarization with the institute. Importance of Trade Training, machinery used in the trade as well as industries.</p> <p>Demonstration to the fire fighting & equipments in shop floor and safety precaution in wood working sections and wood working machines.</p> <p>Introduction to the safety rules in shop floor and to the firefighting equipment.</p>	<p><u>Safety precautions:</u></p> <p>Introduction to the wood working trade, workshop activities and general discipline.</p> <p>General safety – Personal safety habit, workshop safety habit, hand tools safety, machine, etc</p> <p>BIS for carpenter Metal used for tools.</p> <p>Classification of hand tools in carpentry shop.</p> <p>Workshop appliances – Work benches, bench stop, bench hook, mitre board, mitre box, shooting board, hold fast, etc.</p> <p>Marking, measuring & testing tools- description, types, sizes, uses etc</p>
2 & 3	<p><u>Sawing practice :</u></p> <p>Using saws and special saws – hand saw, bow saw, key hole saw etc., (Ripping, cross cutting, curve cutting, oblique sawing etc.)</p> <p>Sharpening and setting of different types of saws.</p> <p><u>Hand Tools and portable power tools - curve cutting saws :</u> compass saw, coping saw, bow saw, fret saw etc. - description, types, size, use, care and maintenance. Sharpening and setting of saws.</p>	<p><u>Saws and the Planes :</u></p> <p>Bench saws & curve cutting saws –description, types ,sizes, uses etc</p> <p>Saw sharpening for Cross cutting saws & Rip saws</p> <p><u>Different plane:</u></p> <p>Bench planes- description, types, sizes, uses etc</p>

	<p>Portable circular saw and its uses. . Portable circular saw and its uses. <u>Planning practice</u></p> <p>Using planes and special planes – jackplane, block plane, rebate plane, plough plane, compass plane etc. (planning face side, face edge, face end, rebate, groove, concave, convex etc.)</p> <p>Grinding and sharpening of cutters- plane cutter, cutter for rebate planes, molding planes, plough plane, etc.</p>	<p>Curve cutting planes- description, types, sizes, uses etc</p> <p>Special purpose planes-description, types, sizes, uses etc</p> <p>Sharpening of plane cutters.</p> <p>Botanical classification of timber tree, growth of timber, The parts of timber tree seen from cross section</p> <p>Timber identification.</p> <p>Properties of timber – physical & mechanical</p>
<p>4 & 5</p>	<p><u>Chiseling Practice</u> <u>And multiple chiseling practice:</u></p> <p>Chiseling along the grains, across the grains ,vertical, horizontal, mortise etc. by using Firmer, bevel edged, paring, mortise chisel etc</p> <p>Curve chiseling (convex and concave) by using firmer gouge and scribing gouge.(concave, inner diameter (circle)</p> <p>Grinding of chisel and gouge.</p> <p>Sharpening and honing of chisel and gouge.</p>	<p><u>Growth of timber trees :</u></p> <p>Description of timber-</p> <p>Hard wood varieties like-teak ,sal, haldu etc</p> <p>Soft wood varieties like-deodar, chir, kair etc</p> <p>Physical and mechanical properties of timber</p> <p>Shrinkage of timber & its effect on timber.</p> <p><u>Paring tools :</u></p> <p>Chisels- Description, types, sizes, uses etc</p> <p>Gouges- Description, types, sizes, uses etc</p> <p>Grinding tools- Description, types, sizes, uses etc</p> <p>Honing tools/sharpening tools- Description, types, sizes, uses etc</p>
<p>6</p>	<p><u>Application of boring tools:</u></p> <p>Using boring tools- Hand drilling machine, Drill bit, counter sink bit, expansion bit etc.(making hole in wood and thin wood,</p>	<p><u>Seasoning of timber-</u></p> <p>Seasoning of timber-</p>

	<p>counter boring, countersink boring, etc.</p>	<p>Natural seasoning, artificial seasoning - description, types etc</p> <p>Advantages & disadvantages of seasoning Conversion of timber & conversion method</p> <p>Drill bits, handled anger, gimlet, bradawl- description, sizes, uses etc</p> <p>Hand drill machine, breast drill machine, ratchet brace- description, sizes, uses etc</p> <p>Files and rasps-used in carpentry section- Description, types, sizes, uses etc</p> <p>Defects in timber- Growth defects, grain defects, seasoning defects, other defects like decay, insect etc.</p>
<p>7 & 8</p>	<p><u>Joint practice:-</u> Demonstration and making framing joints :-</p> <p>Making framing joints : Half lap, mortise & tennon, bridle joints etc.</p> <p>Making angle joints: Housing, simple butt, shoulder butt joints dovetail joints, etc.</p> <p>Making wooden dowel for joints.</p>	<p><u>Wood working joints :</u></p> <p>Technical terms used in joints</p> <p>Classification of joints used in carpentry</p> <p>Framing joint-half lap joint, mortise and tenon joints, bridle joint- Description, types, uses etc</p> <p>Angle joints- Description, types, uses etc</p> <p>Types of dowels</p> <p>Trade sizes and market forms of timber Manufacturing terms.</p>

<p>9 & 10</p>	<p><u>Making Widening joints:</u> Making widening joints : Butt, dowelled, tongue and groove, rebate joints etc. <u>lengthening joints :</u> Making lengthening joints : Table scarf, bevel scarf joints etc. Method of timber stacking for seasoning. Prepare a bill of material for different jobs, estimation and costing.</p>	<p><u>Widening joints-</u> Widening joint- Simple butt, dowelled butt, rebated, tongued, pocket screwed, tongued and grooved, slot screwed- description, uses etc <u>Lengthening joints-</u> Lengthening joints- description, types, uses etc Calculation of timber- Log form, plank form(in cubic feet, cubic centimeter and cubic meter). Measuring sheet materials</p>
<p>11 to 13</p>	<p><u>Fixing of Metal Fittings in jobs :</u> Fitting of hinges, locks, handles, fasteners, tower bolts, casters, hasp and staple, door rings, all drops etc. Using screws, making holes using hand drilling machine, screwing with screwdriver set.</p>	<p><u>Striking tools-</u> Striking tools-hammers, mallets used in carpentry- Description, types, sizes, uses etc <u>Impelling tools-</u> Impelling tools-Punches, screw drivers used in carpentry- description, types, sizes, uses etc <u>Miscellaneous tools -</u> Miscellaneous tools like-pincer, cutting pliers, crowbar etc- description, sizes, uses etc Nails- Description, types, sizes, uses etc Wood screws- Description, types, sizes, uses etc. Wood adhesives- Description, types, uses etc. <u>Conversion of timber.</u> _Definition, types, applications</p>

<p>14 & 15</p>	<p><u>Application of laminated sheet-</u> Application of laminated sheet- tool box, tray, etc.</p> <p><u>Application of block boards –</u> Application of block boards –Small racks etc.</p> <p><u>Application of sun mica sheets-</u> Application of sun mica sheets- Kitchen tool box, step tool etc. Glues, nails and screws.</p>	<p><u>Fiber board-</u> Solid core stock board- Description, types, sizes, uses etc Manufacturing of solid core stock board</p> <p>Fiber board- (1) Hard board, (2) Medium density fiber board (MDF), (3)insulated board- Description, sizes, uses etc Manufacture of fiber board.</p> <p>Decorated laminated plastics- Description, types, sizes, etc Manufacturing of decorated laminated plastics</p>
<p>16 & 17</p>	<p><u>Application of plywood and veneers :</u> Application of plywood and veneer ply over table shelves etc.</p>	<p><u>Veneers and Ply Wood</u> Veneers- Advantages of veneered construction, types of veneers, Manufacturing of veneers. Plywood- description, types, sizes ,uses of plywood, Manufacturing of plywood. Classification and grading of plywood, Properties of plywood i.e. advantages over solid wood</p>
<p>18 & 19</p>	<p><u>By using of plywood and Other surface Treated (OST) sheet :</u> Application of plywood and OST sheet- making book cases, side rack etc.</p>	<p><u>Wood particle board-</u> Wood particle boards- Description, types, uses etc Manufacturing of particle board</p> <p>Selection of timber for various work i.e.- (1) for building constructions like door, window, (2) for body building work like, bus, railway (3)for hammer handles, sport goods etc.</p>

20	Industrial visit	Industrial visit
21 & 22	<p><u>Using carving hand tools.:</u></p> <p>Using carving hand tools. Carving of simple figures. (leaves, flowers etc.)</p> <p>Carving simple figures in different woods</p>	<p><u>Carving Hand Tools :</u> Carving hand tools- Description, types, sizes, uses etc</p> <p><u>Preservation of timber-</u></p> <p>Preservation of timber Preservatives used in process. Strength data of various form of timber such as-beam, post, rail etc</p>
23 & 24	Revisions / Project work / Repairing work	Revision
25 &26	Final trade test	Final trade test

Achievements:

1. Trainees will be able to work prepare / Manufacturing a complete assemble / job.
2. Trainees will be able to write manufacturing process , required list of materials and tools etc.
3. The trainees will be able to identify, select and use tools and timbers and makes simple joints.
4. Trainees will be able to make simple objects viz. tray, rack, stool, table, wall unit etc
5. Trainees will be able to repair old furniture.
6. Trainees will be able to operate the portable power machines.

E. LIST OF TOOLS AND EQUIPMENTS

For a batch of 20 Trainees for the trade of – **CARPENTER Under CITS**

For individual tool kit: - for 20 trainees -- 20 sets;

ONE set may be kept for instructor (For Demonstration) -- 1 set

Total -- 21 Sets

Sl. No	Name of the Tools and Equipments	Qty/Unit	
01	Measuring Tape	3 Meter	21 nos.
02	Marking Knife	200 mm	21 nos.
03	Carpenter Square	200 mm	21 nos.
04	Bevel square	200 mm	21 nos.
05	Carpenter marking gauge.		21 nos.
06	Carpenter mortise gauge		21 nos.
07	Hand saw	450 mm	21 nos.
08	Tenon saw	300 mm	21 nos.
09	Jack plane metal	335 x 50 mm cutter	21 nos.
10	Smoothing plane metal	200 x 50 mm cutter	21 nos.
11	Bevel edged firmer chisel	6, 10, 15, 20 and 25 mm width	21 nos. each
12	Mortise chisel	6, 10, 15 mm width	21 nos. each
13	screw driver (Cabinet maker)	300 mm	21 nos.
14	Mallet medium size		21 nos.
15	Claw hammer	500 gram	21 nos.
16	Oil stone (Carborundum universal silicon carbide combination rough and fine)	200 x 50 x 25 mm	21 nos.
17	Hand brush for bench cleaning	450 mm	20 nos.

TOOLS: EQUIPMENT AND GENERAL OUTFIT

Sl. No	Name of the tools and equipments		Qty/Unit
01	Rule six	1 metre	4 nos.
02	Construction scale	1 metre	4 nos.
03	Spring caliper inside	150 mm	4 nos.
04	spring caliper outside	150 mm	4 nos.
05	Wing compass	300 mm	2 nos.
06	Trammel point	450 mm	2 pairs
07	Sprit Level	300 mm	2 nos.
08	Rip Saw	600 mm	4 nos.
09	Cross cut saw	600 mm	4 nos.
10	Eye shield		4 nos.
11	Key hole saw	250 mm	4 nos.
12	Fret saw frame	150 mm	2 nos.
13	Compass saw	350 mm	2 nos.
14	Adze	1.5 kg	4 nos.
15	Trying plane metal	450 x 60 cutter	2 nos.
16	Plane rebate	250 mm	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	250 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. each
23	Gauge scribing	6, 10, 12, 16, 20 mm	8 nos. each
24	Ball peen hammer	600 grams	4 nos.
25	Cross peen hammer	600 grams	4 nos.
26	Screw driver (London pattern)	300 mm	4 nos.

27	Screw driver (Round)	250mm	4 nos.
28	Phillips screw driver	150mm	4 sets
29	Pincer	250mm	4 nos.
30	File half round 2 nd cut	300 mm	8 nos.
31	File wood rasp	300 mm	8 nos.
32	Triangular file slim tapper	100, 125 & 150 mm	12 nos. each
33	Card file (steel)wire brush for file	12 and 25 mm	2 nos. each
34	Hand drill machine	6 mm capacity	8 nos.
35	Ratchet brace	250 mm sweep	4 nos.
36	Hand auger	10 & 12 mm	2 nos. each
37	Centre bits	6,8,10,12 mm	2 nos. each
38	Expansion bit sets		2 sets
39	Drill bits	3,4,5,6,8,10,12 mm	2 nos. each
40	Counter sink bit rose type	12 mm	4 nos.
41	Centre punch	5 mm	4 nos.
42	Oil can		2 nos.
43	Combination pliers	200 mm	2 nos.
44	Plier type saw setter	For Rip Saw and Tenon saw	2 nos. each
45	Number punch	12 mm	8 nos.
46	Slip stones	100 mm	8 nos.
47	Round crow bar with chisel and claw end	1070 x 25 mm	2 nos.
48	'G' clamp	100 mm	8 nos.
49	'G' clamp	150 mm	8 nos.
50	'G' clamp	250 mm	4 nos.
51	'T' bar cramp	0.6 meters	8 nos.
52	'T' bar cramp	1.25 meters	4 nos.
53	'T' bar cramp	1.75 meters	2 nos.
54	Carpenter vice	250 mm width of jaws	20 nos.
55	Saw sharpening vice	250 mm	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	600 x 600 mm	1 no.

61	Carpenter's work bench	2400 x 900 x 800 mm. height	10 nos.
62	Steel locker, 8 compartment with individual locks	1980 x 910 x 480 mm depth	4 nos.
63	Steel almirah with shelves	1680 x 910 x 480 mm depth	3 nos.
64	chalk board with easel		1 no.
65	Material rack		2 nos.

GENERAL INSTALLATION AND ACCESSORIES

SI. NO	DESCRIPTION	SIZE	QTY
01	Surface planner machine	450mm	1 no.
02	Thickness planer machine	450mm	1 no.
03	Circular saw machine	300mm dia.	1 no.
04	Wood turning lathe machine	150mm height of centers, 1.75 meter bed.	2 nos.
05	Set of turning tools.	Set of 8	2 sets
06	Mortising machine hollow chisel type.		1 no.
07	Mortising machine chain type		1 no.
08	Bench grinder double end pedestal	200mm wheel	1 no.
09	Drill machine with chuck	12mm capacity	1 no.
10	Portable power electric drill	6mm capacity(wolf type)	1 no.
11	Portable power disc sander	200mm dia.	1 no.
12	Adjustable band saw sharpener		1 no.
13	Electric heater	1000/1500 W	1 no.
14	Portable electric blower		1 no.
15	Portable power Router		1 no.
16	Moisture meter		1 no.
17	Grease gun		1 no.
18	Spanner double end	Set of 8, from 8 mm to 27mm	2 nos. each
19	Electrical drying oven(small type)		1 no.
20	Band saw machine		1 no.
21	Fire extinguisher		1 no.
22	Fire buckets		1 no.
23	Jig saw machine (wood working)		1 no,
24	Disc sander double side	600mm	1 no.

25	Portable power planer		1 no.
26	Rotary hammer	Light duty	1 no.
27	Wood working CNC Router machine		1 no.
28	Trimmer		1 no.
29	Angle grinder		1 no.
30	Portable power circular saw		1 no,
31	Wood working miter saw machine		1no.
32	Wood working table circular saw machine		1no.
33	Screw driver-basic duty(cordless)		1no.

**F. FURNITURE, ACCESSORIES AND AUDIO VISUAL AIDS FOR
SEMESTER – I (TT- I AND TP- I - COMMON FOR ALL ENGG. TRADES)**

SL. No.	Name of the tools and equipment	Qty per unit
01	Class Room Chairs (armless) / Dual desk may also be allowed	20 /10
02	Class Room Tables (3ft X 2ft) / Dual desk may also be allowed	20 /10
03	Chair for Trainer (armed) movable	01
04	Table for Trainer (4 ½ ft X 2 ½ ft) with Drawer and cupboard	01
05	LCD / LED Projector	01
06	Multimedia Computer System with all accessories with UPS (.5 KVA)	01 set
07	Computer Table	01
08	White Board (6ft X 4 ft.)	01 no.
09	LCD Projector Screen	
10	Air Conditioner 1.5Ton (OPTIONAL)	02
11	Wall Clock	01 no.
12	Wall charts, Transparencies and DVDs related to the trade	As required

G. LIST OF TRADE COMMITTEE MEMBERS

Sl. No.	Name & Designation Sh./Mr./Ms.	Organization	Mentor Council Designation
1.	Prof. Nirjhar Dhang. (H.O.D)	Dept. of Civil Engg. IIT Kharagpur	Chairman
2.	Col. N. B. Saxena.	Construction Skill Development Council of India (CSDCI)	Member
3.	Satish Gottipati. (M. D.)	Preca Solutions (E)	Member
4.	Meena Raghunathan. (Director, Community Science.)	GMRU Foundation, Hyderabad.	Member
5.	D. K. Chattopadhyay. (Training Officer.)	ATI, Kolkata. Dasnagar, Howrah.	Member
6.	S. R. Vhatkar. (Training Officer.)	ATI, Kolkata. Dasnagar, Howrah.	Member
7.	A. K. Naskar. (Training Officer.)	ATI, Kolkata. Dasnagar, Howrah.	Member
8.	S. Chockalingam. (Training Officer.)	CTI, Chennai,	Member
9.	Tapan Kr. Halder. (Training Officer.)	RDAT, Kanpur.	Member
10.	Arpana Singh. (T.O.)	N.V.T.I (W) Noida.	Member
11.	P. Karithashankar. (T. O.)	N.V.T.I (W) Noida.	Member
12.	Simni. (T. O.)	N.V.T.I (W) Noida.	Member
13.	Suman Kumari. (T. O.)	N.V.T.I (W) Noida.	Member

Syllabus for the subject

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TRADE PRACTICAL –II**

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3. Subjects covered in the Semesters : Detailed in Section - C
4. Name of the Subject : **TRADE THEORY – II & TRADE PRACTICAL- II**
5. Applicability : **CARPENTER TRADE**
6. Examination : AITT to be held at the end of each semester.
7. Space Norms : (a) One class room of minimum 30 sq.m. area having
Minimum width of 5 m.and with 6000 lumen
(b) Workshop : 120 sq. meter having minimum width of
8 m. and with 30000 lumen
The electrical equipments of Class room should conform to minimum 3 star Building energy rating per Bureau of Energy Efficiency (B.E.E.)
8. Power Norms : (a) 1 KW for Class room
(b) 10 KW for Workshop.
9. Unit strength (Batch Size) : 20
- 10.Entry qualification : Completed Semester – I of **CARPENTER** trade under
CITS **OR** Diploma/Degree in Mechanical/Production
Industrial Engineering from AICTE recognized Board / University.

11. Trainers' Qualification : NTC/NAC in the trade of **CARPENTER** with CITS (2 Semesters) and 5 years' post qualification experience OR Diploma or Degree in Mechanical / Production/Industrial Engineering from AICTE recognized Board / University with five / two years experience respectively and

12. Desirable : Passed National Craft Instructor Training course in same or relevant trade.

In case of two units, one trainer must be Degree in Engineering.

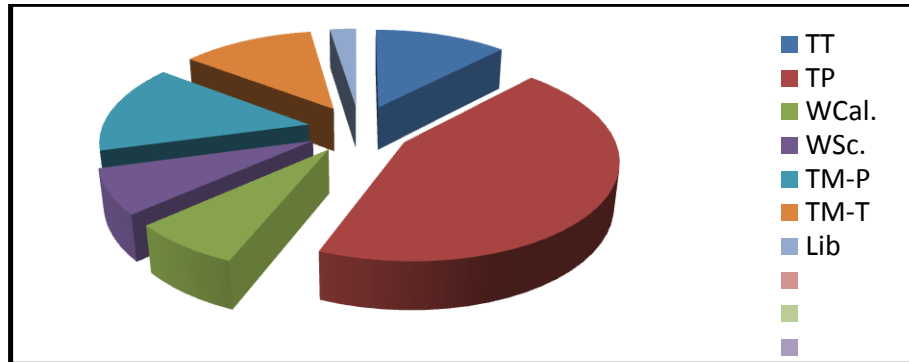
C. SEMESTER WISE ALLOTMENT OF TIME & MARKS AMONG THE SUBJECTS FOR CITS

	SUBJECTS	Hrs. / Week	% of time allotted	Marks	Sessional	Full Marks	Pass Marks		
							Exam.	Sessional	Total
First semester	Trade Practical – 1	20	50	200	30	230	120	18	138
	Trade Theory - 1	6	15	100	20	120	60	12	72
	Workshop Cal.	6	15	75	-	75	45	-	45
	Workshop Sc.	6	15	75	-	75	45	-	45
	Library	2	5	-	-				
	TOTAL for Sem. - I	40		450	50	500	270	30	300
Second semester	Trade Practical – 2	16	40	200	30	230	120	18	138
	Trade Theory - 2	4	10	100	20	120	60	12	72
	Training Methodology - Practical	12	30	200	30	230	120	18	138
	Training Methodology - Theory + IT	6+2	20	100	20	120	60	12	72
	TOTAL	40		600	100	700	360	60	420
	GRAND TOTAL	80		1050	150	1200	630	90	720

Subject	Time in %	Marks in %
Trade Practical	45	38
Trade Theory	12.5	20

Hourly Distribution

1200 marks for 2 semesters Pass marks: 720



TOTAL:

Total for Trade	57.5	58
Training Methodology (Practical)	15	19
Training Methodology (Theory) + IT	12.5	10
Total for Training Methodology & IT	27.5	29
Workshop Cal.	7.5	6.25
Workshop Sc.	7.5	6.25
Library	2.5	-

D. REVISED SYLLABUS FOR THE TRADE: CARPENTER CRAFT INSTRUCTOR TRAINING SCHEME

Note: During the discussion of any machine tools, related precautions and safety measures should be discussed.

For Semester - II

Trade Theory				Trade Practical		
Sl. No.	Topics	Hours	Marks	Topics	Hours	Marks
1.	<u>Selection of timber for different kinds of joints, considering their strength and utility</u>	12	5	<u>Practice on different types of</u> – Framing joints, Angle joints, Broadening joints and Lengthening joints.	48	15

2.	<u>Size and specification of furniture used in different places.</u>	08	10	<u>Making a book shelf / rack etc.-</u>	32	15
3.	<u>Table - types, size, uses etc</u> <u>And Metal Fittings used.</u>	08	10	<u>Making table with drawer and cupboard.</u>	32	20
4.	<u>Door frame and Door shutters :</u>	08	10	<u>Making Models of Door frame and Door shutters :</u>	32	15
5.	<u>window frame and window shutters :</u>	08	10	<u>Making Models of window frame and window shutters :</u>	32	15
6.	<u>Wooden partition-types, sizes, purposes</u>	08	5	<u>Lay out and making of partition:</u>	32	15
7.	<u>Roofs , Roof trusses and Wooden floors:</u>	08	5	<u>Making framed roofs:</u>	32	15
8.	<u>Wood Finishes.</u> <u>Clear finishes :</u>	08	10	<u>Wood Finishing:</u> <u>Clear finishing :</u>	32	20

9.	<u>Wood Finishes.</u> <u>Pigmented finishes:</u>	04	10	<u>Wood Finishing -</u> <u>Pigmented finishing :</u>	16	20
10.	<u>Wood working CNC Router</u>	04	10	<u>Demonstration and Operational techniques of CNC router machine</u>	16	15
11.	Writing Basic Programme, language of Programming	08	10	Basic and Advance Programming & Operation on CNC Router	32	25
12.	<u>Tea poi :</u>	08	5	<u>Making tea poi :</u>	32	10
13.	<u>Revision</u>			<u>Revisions / Project work / Repairing work</u>		
14.	<u>Final trade test</u>		100	<u>Final trade test</u>		200

SEMESTER -II
TRADE TECHNOLOGY

WEEK NO.	TRADE PRACTICAL	TRADE THEORY
1 to 3	<p><u>Practice on different types of</u> – Framing joints, Angle joints, Broadening joints and Lengthening joints.</p> <p>Making a stool / Armless chair / Armed chair - Using wood working machines:- Circular saw, Surface planner, Thickness planner,</p>	<p><u>Selection of timber for different kinds of joints, considering their strength and utility</u></p> <p>Designing of furniture (indoor and outdoor) Timber selection for different furniture.</p> <p>Chair type sizes etc</p> <p>Portable power circular saw- description uses etc</p> <p>Circular saw machine- Uses, construction and parts, safety, operations etc.</p> <p>Surface planner- Uses, construction and parts, safety, operations, etc</p> <p>Thickness planner - Uses, construction and parts, safety and operations, etc.</p>
4 & 5	<p><u>Making a book shelf / rack etc.-</u> Using wood working machines:- Band saw machine, Hollow chisel mortising machine, Chain mortising machine.</p>	<p><u>Size and specification of furniture used in different places.</u></p> <p>Band saw- Description, uses, construction and parts, safety and operations, etc.</p>

	tenoning machine,	Hollow chisel mortising machine - Description, uses, construction and parts, safety and operations, etc. Chain mortising machine - Description, uses, construction and parts, safety and operations, etc. Tenoning machine- Description, size, parts and uses
6 & 7	<u>Making table with drawer and cupboard.</u> Making table with drawer and cupboard Fitting of drawer lock, hinges, cupboard lock, etc. Using wood working machines:- Disc sander, Portable planner and portable disc sander etc.	<u>Table - types, size, uses etc</u> <u>And Metal Fittings used.</u> Table - types, size, uses etc Hinges- types, size, uses etc Locks and catches - types, size, uses etc Other fitting- description, size, uses etc. Portable power planes- Description, uses etc Disk sanding machines- Description, size, parts and uses etc. Portable power dick sanders- Description, size, parts, uses care.
8 & 9	<u>Making Door frame and Door shutters (Model) :</u> Making door frame (model) Making door shutters (model)- paneled and flush Using wood working machines, Portable power router etc.	<u>Door frame and Door shutters :</u> Door frames-types, sizes etc used in building constructions Door shutters- types, sizes etc used in building constructions Portable power router- Description, uses care etc
10 &	<u>Making window frame and window shutters (Model) :</u> Making window frame (model)	<u>Window frame and window shutters :</u> Window frames-- types, sizes etc

11	<p>Making window shutters (model) with solid timber and glass panel. Using hand tools, Glass cutter, etc.</p>	<p>used in building constructions</p> <p>Window shutters-- types, sizes etc used in building constructions</p>
12 & 13	<p><u>Lay out and making of partition:</u> Lay out and making of partition, using jig saw, rotary hammer. Hand drilling etc.</p>	<p><u>Wooden partition-types, sizes, purposes :</u></p> <p>Wooden partition-types, sizes, purposes etc</p> <p>Jig saw machine- Uses, construction and parts, Jig saw operations Jig saw safety precautions, etc.</p> <p>Drilling machine and Portable power drill- Description, size, parts , uses, etc</p> <p>Portable power rotary hammer- Description, size, parts , uses etc</p>
14 & 15	<p><u>Making Model of framed roofs:</u> Making framed roofs (model) constructions</p> <p>Making tusk tenon and mortising joint. Making wooden floor (model)</p>	<p><u>Roofs , Roof trusses and Wooden floors:</u></p> <p>Roofs / ceiling – Technical terms used in roofing and ceiling construction. Roofs - types ,sizes, purpose</p> <p>Pitched roof structure - Single and double pitched roof structure, description etc.</p> <p>Roof trusses - King post roof truss & queen post roof truss.</p> <p>Wooden floors – Construction details; types, uses etc.</p>
16	<p><u>Wood Finishing:</u> Wood finishing-</p> <p>(1) By using Sand papering, filling materials i.e. putty, wax, saw dust, colour powders etc. for preparation of surface</p> <p>(2) By using different methods of application of -</p> <p>1) French polish.</p>	<p><u>Wood finishes</u></p> <p>Types of abrasive papers - Sand paper, Garnet paper, Silicon carbide papers - Grade, uses etc</p> <p>Wood/Timber finishes- Purpose, classification of finishes,</p> <p>Basic stages in finishing of wood – (a)Surface preparation.</p>

	2) Varnishes, etc.	(b)Surface treatment – Bleaching. staining, types of stains, filling, types of wood grain fillers. Types of clear finishes- description, uses & their application method.
17	<u>Wood finishing continue :</u> Wood finishing- (1) By using Sand papering, filling materials i.e. putty, wax, saw dust, color powders, plaster of parish etc. for preparation of surface By using different methods of application of - (a) Wood primer. (b) Paints etc	<u>Wood finishes continue :</u> Types of opaque or pigmented finishes- description, uses, and their application method used in carpentry etc. Wood primer- description, uses and their application method used in carpentry. description and uses of finishes Shellac polish, varnish, wax polishes etc and their application.
18	Wood working Router machine Fundamental of wood working CNC Router- Introduction & demonstration , operational techniques of CNC Router machines.	Wood working CNC Router-Description, types, sizes, parts, functions, operations. Safety precautions, care and maintenance. And its applications.
19&20	Basic Programming & Operation on CNC Router .	How to write the basic program, according to the operation. what are the language of programming.
21	Advance Programming & Operation on CNC Router .	How to write the basic program, according to the operation. what are the language of programming.
22 & 23	<u>Making tea poi :</u> Making tea poi with plywood and decorative laminated plastics i.e. sun mica, etc. Using of special wood working machines:-wood turning lathe, jig saw, angle grinder.	<u>Tea poi :</u> Tea poi- types, size, uses etc Wood turning lathe machine-construction, parts and its appliance, Wood turning tools wood turning operations, lathe safety precautions,

		Sanding and finishing lathe work Angle grinder- Description,types, size, uses etc
24 & 25	Revisions/ Project work / Repairing Work	Revisions
26	Final trade test	Final trade test

Achievements:

- 1.Trainees will be able to work prepare / Manufacturing a complete assemble / job.
- 2.Trainees will be able to write manufacturing process , required list of materials and tools.
3. The trainees will be able to do simple Furniture by using different Sheets and Timbers
4. Trainees will be able to prepare Furniture etc. by using Improved Timber / boards .
5. Trainees will be able to finish the wooden articles by using different wood finishes. repair old furniture.
- 6.Trainees will be able to do repairing of old furniture and re- finishing.
7. Trainees will be able to operate wood working machines.

E. LIST OF TOOLS AND EQUIPMENTS

For a batch of 20 Trainees for the trade of – **CARPENTER**

Under CITS

For individual tool kit: - for 20 trainees -- 20 sets;

ONE set may be kept for instructor (For Demonstration) -- 1 set

Total -- 21 Sets

Sl. No	Name of the tools and equipments	Qty/Unit	
01	Measuring Tape	3 Meter	21 nos.
02	Marking Knife	200 mm	21 nos.
03	Carpenter Square	200 mm	21 nos.
04	Bevel square	200 mm	21 nos.
05	Carpenter marking gauge.		21 nos.
06	Carpenter mortise gauge		21 nos.
07	Hand saw	450 mm	21 nos.
08	Tenon saw	300 mm	21 nos.
09	Jack plane metal	335 x 50 mm cutter	21 nos.
10	Smoothing plane metal	200 x 50 mm cutter	21 nos.
11	Bevel edged firmer chisel	6, 10, 15, 20 and 25 mm width	21 nos. each
12	Mortise chisel	6, 10, 15 mm width	21 nos. each
13	screw driver (Cabinet maker)	300 mm	21 nos.
14	Mallet medium size		21 nos.
15	Claw hammer	500 gram	21 nos.
16	Oil stone (Carborundum universal silicon carbide combination rough and fine)	200 x 50 x 25 mm	21 nos.
17	Hand brush for bench cleaning	450 mm	20 nos.

TOOLS: EQUIPMENT AND GENERAL OUTFIT

Sl. No	Name of the tools and equipments		Qty/Unit
01	Rule six	1 metre	4 nos.
02	Construction scale	1 metre	4 nos.
03	Spring caliper inside	150 mm	4 nos.
04	spring caliper outside	150 mm	4 nos.
05	Wing compass	300 mm	2 nos.
06	Trammel point	450 mm	2 pairs
07	Sprit Level	300 mm	2 nos.
08	Rip Saw	600 mm	4 nos.
09	Cross cut saw	600 mm	4 nos.
10	Eye shield		4 nos.
11	Key hole saw	250 mm	4 nos.
12	Fret saw frame	150 mm	2 nos.
13	Compass saw	350 mm	2 nos.
14	Adze	1.5 kg	4 nos.
15	Trying plane metal	450 x 60 cutter	2 nos.
16	Plane rebate	250 mm	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	250 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. each
23	Gauge scribing	6, 10, 12, 16, 20 mm	8 nos. each
24	Ball peen hammer	600 grams	4 nos.

25	Cross peen hammer	600 grams	4 nos.
26	Screw driver (London pattern)	300 mm	4 nos.
27	Screw driver (Round)	250mm	4 nos.
28	Phillips screw driver	150mm	4 sets
29	Pincer	250mm	4 nos.
30	File half round 2 nd cut	300 mm	8 nos.
31	File wood rasp	300 mm	8 nos.
32	Triangular file slim taper	100, 125 & 150 mm	12 nos. each
33	Card file (steel)wire brush for file	12 and 25 mm	2 nos. each
34	Hand drill machine	6 mm capacity	8 nos.
35	Ratchet brace	250 mm sweep	4 nos.
36	Hand auger	10 & 12 mm	2 nos. each
37	Centre bits	6,8,10,12 mm	2 nos. each
38	Expansion bit sets		2 sets
39	Drill bits	3,4,5,6,8,10,12 mm	2 nos. each
40	Counter sink bit rose type	12 mm	4 nos.
41	Centre punch	5 mm	4 nos.
42	Oil can		2 nos.
43	Combination pliers	200 mm	2 nos.
44	Plier type saw setter	For Rip Saw and Tenon saw	2 nos. each
45	Number punch	12 mm	8 nos.
46	Slip stones	100 mm	8 nos.
47	Round crow bar with chisel and claw end	1070 x 25 mm	2 nos.
48	'G' clamp	100 mm	8 nos.
49	'G' clamp	150 mm	8 nos.
50	'G' clamp	250 mm	4 nos.
51	'T' bar cramp	0.6 meters	8 nos.
52	'T' bar cramp	1.25 meters	4 nos.
53	'T' bar cramp	1.75 meters	2 nos.
54	Carpenter vice	250 mm width of jaws	20 nos.
55	Saw sharpening vice	250 mm	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	600 x 600 mm	1 no.
61	Carpenter's work bench	2400 x 900 x 800 mm. height	10 nos.
62	Steel locker, 8 compartment with individual locks	1980 x 910 x 480 mm depth	4 nos.
63	Steel almirah with shelves	1680 x 910 x 480 mm depth	3 nos.
64	chalk board with easel		1 no.
65	Material rack		2 nos.

GENERAL INSTALLATION AND ACCESSORIES

SI. NO	DESCRIPTION	SIZE	QTY
01	Surface planner machine	450mm	1 no.
02	Thickness planer machine	450mm	1 no.
03	Circular saw machine	300mm dia.	1 no.
04	Wood turning lathe machine	150mm height of centers, 1.75 meter bed.	2 nos.
05	Set of turning tools.	Set of 8	2 sets
06	Mortising machine hollow chisel type.		1 no.
07	Mortising machine chain type		1 no.
08	Bench grinder double end pedestal	200mm wheel	1 no.
09	Drill machine with chuck	12mm capacity	1 no.
10	Portable power electric drill	6mm capacity(wolf type)	1 no.
11	Portable power disc sander	200mm dia.	1 no.
12	Adjustable band saw sharpener		1 no.
13	Electric heater	1000/1500 W	1 no.
14	Portable electric blower		1 no.
15	Portable power Router		1 no.
16	Moisture meter		1 no.
17	Grease gun		1 no.
18	Spanner double end	Set of 8, from 8 mm to 27mm	2 nos. each
19	Electrical drying oven(small type)		1 no.
20	Band saw machine		1 no.
21	Fire extinguisher		1 no.
22	Fire buckets		1 no.

23	Jig saw machine (wood working)		1 no,
24	Disc sander double side	600mm	1 no.
25	Portable power planer		1 no.
26	Rotary hammer	Light duty	1 no.
27	Wood working CNC Router machine		1 no.
28	Trimmer		1 no.
29	Angle grinder		1 no.
30	Portable power circular saw		1 no,
31	Wood working miter saw machine		1no.
32	Wood working table circular saw machine		1no.
33	Screw driver-basic duty(cordless)		1no.

**H. FURNITURE, ACCESSORIES AND AUDIO VISUAL AIDS FOR
SEMESTER – II (TT- II AND TP- II - COMMON FOR ALL ENGG. TRADES)**

SL. No.	Name of the tools and equipment	Qty per unit
0 1	Class Room Chairs (armless) / Dual desk may also be allowed	20 /10
0 2	Class Room Tables (3ft X 2ft) / Dual desk may also be allowed	20 /10
0 3	Chair for Trainer (armed) movable	01
0 4	Table for Trainer (4 ½ ft X 2 ½ ft) with Drawer and cupboard	01
0 5	LCD / LED Projector	01
0 6	Multimedia Computer System with all accessories with UPS (.5 KVA)	01 set
0 7	Computer Table	01
0	White Board (6ft X 4 ft.)	01 no.

8		
0	LCD Projector Screen	
9		
1	Air Conditioner 1.5Ton (OPTIONAL)	02
0		
1	Wall Clock	01 no.
1		
2	Wall charts, Transparencies and DVDs related to the trade	As required

I. LIST OF TRADE COMMITTEE MEMBERS

Sl. No.	Name & Designation Sh./Mr./Ms.	Organization	Mentor Council Designation
1.	Prof. Nirjhar Dhang. (H.O.D)	Dept. of Civil Engg. IIT Kharagpur	Chairman
2.	Col. N. B. Saxena.	Construction Skill Development Council of India (CSDCI)	Member
3.	Satish Gottipati. (M. D.)	Preca Solutions (E)	Member
4.	Meena Raghunathan. (Director, Community Science.)	GMRU Foundation, Hyderabad.	Member
5.	D. K. Chattopadhyay. (Training Officer.)	ATI, Kolkata. Dasnagar, Howrah.	Member
6.	S. R. Vhatkar. (Training Officer.)	ATI, Kolkata. Dasnagar, Howrah.	Member
7.	A. K. Naskar. (Training Officer.)	ATI, Kolkata. Dasnagar, Howrah.	Member
8.	S. Chockalingam. (Training Officer.)	CTI, Chennai,	Member
9.	Tapan Kr. Halder. (Training Officer.)	RDAT, Kanpur.	Member
10.	Arpana Singh. (T.O.)	N.V.T.I (W) Noida.	Member
11.	P. Karithashankar. (T. O.)	N.V.T.I (W) Noida.	Member
12.	Simni. (T. O.)	N.V.T.I (W) Noida.	Member
13.	Suman Kumari. (T. O.)	N.V.T.I (W) Noida.	Member
14.	M.C Sharma (JDT)	DGE&T(HQ)	Mentor

