SYLLABUS OF SEMESTER SYSTEM

FOR THE TRADE OF

GENERAL CARPENTER

Under

Craftsmen Training Scheme (CTS)

(One year/Two Semesters)

Redesigned in

2014

By

Government of India

Ministry of Labour & Employment (DGE&T)

FORMAT FOR CTS

1. Cover Page

2. Title

3. General Information

4. Week wise contents of TT and TP (In tabular form)

5. Week wise contents of WSC (In tabular form)

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7. Tools and Equipments list - broad specification

8. List of the consumable

9. Trade testing and certification

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GENERAL INFORMATION

1. Name of the trade : GENERAL CARPENTER (Engineering Trade)

2. N.C.O. Code No. : 7124.10, 7124.20

3. Duration of training : **Twelve months (Two semesters of six Months each)**

4. Entry Qualification : **Passed 8th Standard**

5. Unit Strength : **20 trainees in each batch**

6. Space Norms : **a) Class room: 40 sq.mt**

b) Workshop for practical: 120 sq.mt

7. Power Norms : **a) Class room: 1kw (6000 lumen)**

b) Workshop for practical: 8 kW (25000 lumen)

8. Job role : **At the end of course the trainee will be able to:**

1. Work in autonomous museum as technician.

2. Work in industries as skilled labour and as assistant carpenter.

3. Work as site supervisor on carpentry work.

4. Work in showroom dealing in architectural materials

5. Work in Indian railways, in Dockyard, and in Ordnance factory etc.

6. Work in furniture manufacturing units of modular kitchen, and readymade doors and windows etc.

9. No. of Crafts Instructors /Trainers : **Craftsman trainer/Instructor – 2 nos.**

Assistant carpenter – 1 no

10. Instructor's/Trainer's

Qualification : **Degree in Mechanical Engineering from recognized Engineering college/University with 1 years' post qualification experience respectively.**

Or

Diploma in Mechanical Engineering from recognized board of technical education with 3 years post qualification experience in relevant field.

Or

NTC/NAC in the relevant trade with 3 years' post qualification experience in the relevant field.

(The degree/diploma holder instructors must be provided with orientation programme having duration of six months in Training Methodology within two years of their appointment.)

Week wise content index of first semester

S.No	Week No.	Contents Heading Practical/Theory		Duration
1.	01	Familiarization with the workshop.	common Safety precautions.	1 weeks
2.	02	Identification and Familiarization of hand tools.	Safety precaution of the carpentry hand tools &Introduction to timber.	1 weeks
3.	03	Sawing practice ,Hand Tools and portable power tools - curve cutting saws	Saws and the Plane Special saws	1 weeks
4.	04	Planning practice	Different types of Plane Special planes	1 weeks
5.	05	Chiseling Practice and multiple chiseling practice: Holding tools	Hand tools (paring tools);: Striking tools Workshop appliances	1 weeks
6.	06	Joint practice:- Demonstration and making framing joints.	Classification of joint Framing Joints	1 weeks
7.	07-08	Demonstration and making Dovetail joints	Angle joint:- seasoning of Timber	2 weeks
8.	09	Broadening joints	Broadening joints	1 weeks
9.	10	Lengthening joints demonstration and making	Lengthening joints: Different types of scarf joints	1 weeks
10.	11-13	A frame of using different type of joints	Preservation of timber :Files	3weeks
11.	14	Application of boring	boring tools	1 weeks

		tools:		
12.	**15-16**	layout of different furniture.	Description of timbers used in furniture making work. conversion of timber	**2 weeks**
13.	**17**	Making a small table	ply wood and by product of plywood	**1 weeks**
14.	**18**	nailing screwing on job.	Nails and screw	**1 weeks**
15	**19**	Wood carving exercises	. Properties of wood. Preparation of bill of materials and simple estimation	**1 weeks**
16	**20**	application on finished surface. Varnishing on finished surface	Sand paper staining	**1 weeks**
17	**21**	Furniture polishing	French polish, Estimation of timber	**1 weeks**
18	**22**	REVISIONS		**1 weeks**
19	**23-24**	INDUSTRIAL VISIT / project work		**2 weeks**
20	**25-26**	Final exam.		**2 weeks**

Week wise content index of second semester

S.No	Week No.	Contents Heading Practical/Theory		Duration
1.	01-05	Introduction & demonstration, operational techniques of wood working machines.	Wood working machines Market form of timber	5weeks
2.	06-09	Demonstration and use of following- Drilling Machine Grinding Machines Mortiser Machine Universal wood working Machine.	Description, types, sizes, parts, functions, operations, safety precautions, care and maintenance etc.of machine.	4 weeks
3.	10 -11	Exercises. Of pattern making.	Introduction to pattern making	2weeks
4.	12	making Core and core prints	Core and core prints	1 weeks
5.	13-14	Allied Training : 1) SIMPLE FITTING WORK	General safety in fitting shop	2 weeks
6.	15-16	SHEET METAL WORK	SHEET METAL tools	2 weeks

7.	**17-18**	CARPENTRY BUILDING WORK	Introduction about carpentry work involved in building construction Familiarization with the materials which is use in industries as substitute of wood.	**2 weeks**
8.	**19-20**	Marking and making window frame and window shutters	Types of window frame and window shutters --	**2 weeks**
9.	**21**	Exercises on simple floor construction and joints used.	Basic principle of repairing work and repairing technique of furniture, door, window, rack etc. Economical factors and material estimate	**1 weeks**
10.	**22**	Revision		**1 weeks**
11.	**23-24**	Industrial visit		**2 weeks**
12.	**25-26**	Final exam.		**2 weeks**

Syllabus for the trade of " CARPENTER " under C.T.S.

Draft Syllabus on Trade Theory & Trade Practical

Duration six Months

First Semester

Semester code : carp.-01

WEEK NO.	TRADE PRACTICAL	TRADE THEORY
1	**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.	**Safety precautions:** 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.
2	**Identification** and **Familiarization** of hand tools. Demonstration and use of measuring, marking and testing tools.	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 **Introduction to timber** : growth of a trees, cross-section of an exogenous tree trunk, parts, formation. Parts of a tree. Functions and identification of timber and defects , diseases of timber VIZ. Knots , shakes, grains etc
3	**Sawing practice** : - use of different types of the saws Ripping, cross cutting, curve	. **Saw and the Plane** : description, types, sizes, setting, sharpening, uses, etc.

	cutting, oblique sawing etc.; Use of the , bench hook, bench vice, bench stop etc. Sharpening and the setting of the different types of the saws. **Hand Tools and portable power tools - curve cutting saws** :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.	**Special saws** - Compass saw, coping saw, Bow saw, fret saw portable circular saw..
4	**Planning practice** Demonstration and uses of the planes . Setting of the plane holding, Planing techniques. Planing face side, face edge, use of marking gauge etc. Testing 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.	**Different types of Plane** : description, types, sizes, setting, sharpening, uses, etc. . **Special planes:-** Compass plane Moulding plane, Rebate plane, Grooving plane etc. - description, type, size, use, care and maintenance. Portable power planer machine and its uses. .
5	**Chiseling Practice And multiple chiseling practice:** Demonstration and use of different types of	**Hand tools (paring tools);**: Different types of The chisels ,description , sizes, uses. Grinding, sharpening & honing etc.

	chisels. Chiseling along the grain, across the grain of the vertical, horizontal etc. Grinding, sharpening and honing of chisel. **Holding tools** - Clamps, 'G' or 'C' clamp or cramp, sash /'T' bar cramps , saw sharpening vice, carpentry vice etc.	**Striking tools** - Hammers, mallets etc. **Workshop appliances** : work bench, bench vice, bench hook, bench stop shooting board, MITRE board etc. - types, sizes , uses etc.
6	**<u>Joint practice</u>:- Demonstration and making framing joints** :- Halving joints, trenching and housing joints, Mortise and tenon joints, plain hunched tenon and mortise, MITRE tenon and mortise joint, stub tenon, bare faced tenon, bridle joints etc. .	Classification and grading of timbers as per ISI. types of the grains. Joineries: Classification of joint (framing, Angle broadening and the lengthening) **Framing Joints:-** Halving, Mortise and tenon joints, Briddle joints- description, types and uses. .
7-8	.. **Demonstration and making Dovetail joints –** 1) Housing joints ,2) Dovetail joints- Dovetail marking and its applications. Single dovetail, Common dovetail, lapped dovetail, secret mitre dovetail joints, use of dovetail template etc	. **<u>Angle joint</u>**: - Description, types size, uses etc. **Seasoning of Timber:** Types, advantages and disadvantages, 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.
9	**Broadening joints:** Demonstration and making different types of broadening joints - simple butt, rebated	Broadening joints - description, types, and uses. Adhesives - types, uses etc.

	butt, pocket screw, secret pocket butt joint, glued butt, tongue and groove joints etc.	
10	**Lengthening joints demonstration and making: Different types of scarf joints** - Table scarf, bevel scarf etc.	**Lengthening joints: Different types of scarf joints** – Description and types of Table scarf, bevel scarf, tension scarf etc**.**
11-13	. **A frame of using different type of joints -** Small article involving above joints may be made. **Simple wooden furniture making work:** Demonstration and practice on - Making a small wall bracket. Prepare chalk box. Tea tray or office Tray.	**Preservation of timber:** Chemical treatment of timber - types, process etc. and preservatives used. **Files**: Types, grades, uses, care and maintenance. Uses of electrical portable jig saw , portable disc sander, portable electrical drill machine
14	**Application of boring tools:** Use of country drill, hand drill, ratchet brace, breast drill. Portable electric drill machine and its uses. 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.	**Boring tools** : Description and types- 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 & uses.
15 to 16	Demonstration and make layout of different furniture. Making notice board or display board. Use of hard board, ply wood and insulation board. Making a small rack/modern wall unit.	Description of timbers used in furniture making work: - Teak, Sal, Deodar and other wood as available in the local market. **Conversion of timber :** Parallel sawing, radial sawing, quarter sawing, tangential sawing etc. Design of Furniture's for different purpose :- Bed room, dining Hall, Library, Office, Work-shop, Class room.
17 to 18	Making a small table. Demonstration and use of	Kitchen, Garden etc. Manufacturing process of various

	lock, hinges, hasp and staple etc. Making a small box with sunmica top. Demonstration on nailing screwing on job.	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. **Nails and screws**:- Types, size and uses , Nuts and bolts, washers. Lock, hinges, hasp and staple, tower bolt etc. Other fittings- types, sizes and uses.
19	Wood carving exercises and use of carving tools and their sharpening. .	Tools required for carving ornamental works. Properties of wood. Preparation of bill of materials and simple estimation
20	Preparation of surface - use Smoothing plane for knotty or interlocked cross grained timber by scraping, sand papering and portable sander application on finished surface. Varnishing on finished surface.	Method of preparation of surface for staining, tools and equipment required. **Sand paper** - types, grades, size & uses. Portable sander machine and uses. Preparation of putty and use. **Staining**:- Type, process, methods and staining materials. Different staining methods applied for different timber.
21	**Furniture polishing**:- Demonstration on how to make French polish, use of French polish and wax polish. Remove the polish and Re-polishing old furniture.	Description ofFrench polish, wax polish, types and uses. Estimation of timber
22	REVISIONS	
23- 24	INDUSTRIAL VISIT / project work	
25-26	FINAL 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.

Draft Syllabus on Workshop Sience&Calculation

Duration six Months

First Semester

Week No	Workshop Science calculation
1	Introduction and discussion regarding syllabus and importance.
2	Properties and uses of C.I and W.I.
3	Effect of alloying elements on the properties C.I. and steel.
4	Fundamental Arithmetical operation-Addition, subtraction, multiplication, division of whole numbers.
5	Properties and uses of plain carbon steel and alloy.
6	Properties and uses of copper, zinc, lead, tin and aluminum.
7	Fraction and decimals conversion, fraction to decimal and vice versa.
8	Geometry: Fundamental geometrical definition, angles and properties of angles, triangle and properties of triangles, rectangle, square, rhombus, parallelogram etc and their properties.
9	Simplification, application of fundamental arithmetical operation to shop problems.
10	Properties and uses of brass ,bronze ,solder ,bearing, metal ,timber, rubber.
11	System of units –British- Metric and S.I. units for length ,area ,volume ,capacity ,weight ,time ,angle-their conversion .
12	Heat and temperature, thermometric scales, their conversion .Temperature measuring instrument, quantity of heats ,specific heat, latent heat, heat loss and heat gain-simple problems
13	Rest and motion, velocity, acceleration.

14	Newton laws of motion.
15	Power and roots factor, power, base, exponent. Multiplication and division of power , root of number.
18	Square root by arithmetic's and problem related to trade.
19	Percentage changing-percent to decimal and fraction and vice versa.
20	Problem on percentage.
21	Problem related to trade.
22	REVISION
23-24	INDUSTRIAL VISIT
25-26	FINAL EXAMINATION

Achievement:

1. Trainees able to know mechanical properties.
2. Trainees able to know regarding S.I units.
3. Trainees able to know different arithmetical trade related problem.
4. Trainees able to know different maturational trade related problem.

Syllabus for the trade of " CARPENTER " under C.T.S.

Draft Syllabus on Engineering Drawing

Duration six Months

First Semester

Week No	Engineering Drawing
1	Introduction and discussion on syllabus and importance.
2	Importance of engineering Drawing and its knowledge- Free hand sketches of straight, oblique and perpendicular lines. Plain figures like square, rectangle, triangle, circle, polygons etc.
3	Importance of TYPES OF LINES, Draw the types of lines and its applications in engineering drawing.
4-5	Identification of simple geometrical solids from the given models/teaching aids-Freehand sketches for the simple solids like, cube, cone, prism, pyramid, rectangular block etc.

6	Importance of good printing of letters and numbers on drawing –freehand practice of lettering and numbering style as par IS code.
7	Standard line convention and their meaning and their scope of application on engineering drawing as par IS standard. symbols for simple engineer elements materials used on drawing as par IS code
8	Freehand sketches of hand tools and measuring tools, related to the trades e.g. hammer, file, chisel, drill, hack saw, mallets, solder iron, Anvil, punch, glow pipe, electrode holder, scale, caliper, try square, bench vise etc .from the supplied sketches or sample.
9	-do-
10	Importance of putting dimension on the drawing as par IS standard. How to measure the sizes of simple parts and the locations of the other operational surfaces, using simple measuring instrument and how to transfer the measurements or on the drawing of the features for dimension; Freehand sketches to study the techniques employed in dimensioning on the drawing of features for size, location hole area ,angle ,chamfer ,taper etc .from given sample or sketches
11	-DO-
12	Isometric and oblique. Drawing-their methods of representation using simple solids like rectangular block, stepped block, cylindrical features and prisms etc .Freehand sketches for the given features.
13-14	-Do-
15-16	Orthographic projection standard system (1st angel orthographic projection and 3rd angel projection as par IS system. Freehand sketches of simple objects like vee block, stepped block, simple brackets, blacks with holes and grooves to represent the views both in 1st and 3rd angel.
17	Do
18	Orthographic projection with dimensions.
19	-Do-
20-21	CAD on 2D
22	REVISION
23-24	INDUSTRIAL VISIT
25-26	FINAL EXAMINATION

Achievement :

1. Able to draw the Geometrical drawing.
2. Able to draw the free hand sketch of instruments and trade related job.

3. Able to draw the “LETTERING”.
4. Able to understand the symbol of different engineering materials.
5. Able to know different types of dimensioning process and their applications.
6. Able to understand the Isometric and Orthographic view.
7. Able to know Orthographic projection.
8. Basic concept on CAD – 2D.

Syllabus for the trade of “ CARPENTER “ under C.T.S.

Draft Syllabus on Trade Theory& Trade Practical

Duration six Months

Second Semester

Semester code : carp. -02

WEEK NO.	TRADE PRACTICAL	TRADE THEORY
	.	
1-5	**Introduction &demonstration**, operational techniques of wood working machines. Uses of:- A) Band saw: - remove and refit of band saw blades setting and grinding and different Operation :- Ripping ,. Cross-cutting, curve cutting, beveling, chamfering etc. B) Circular Saw: - Ripping, cross cutting, rebating , grooving etc. C) Planning Machine :- Surfacing, thicknessing, chamfering, edging beveling etc, D) Wood Turning lathe: - Use of turning tools, plain turning, taper turning and Turning	**Wood working machines**: 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.

	different articles- Chisel handles, table lamp stand etc. Use of face plate, chuck etc.	
6-9	**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
10-11	**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.) **L**ayout 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.	**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. **Split patterns** -Types and uses. **Dowel-** types, size and uses in pattern making work.
12	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.	**Core and core prints**: 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.
13-14.	**Allied Training :** 1) **SIMPLE FITTING WORK** – Safety precaution to be observed while using marking	**General safety in fitting shop.** Marking tools: Types, specification, use, care and maintenance of tools: Steel rule,

	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. **Skills** : 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.	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.
15-16	2) **SHEET METAL WORK** - 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	**Common Sheet Metal Tools**: 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.
17-18	**CARPENTRY BUILDING WORK** 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.	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. **Familiarization with the materials which is use in industries as substitute of wood.** Characteristics of material, Mechanical properties, durability, Applications, etc.
19-20	Marking and making window	Types of window frame and

	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.	window shutters. Protection bars: types and uses. Roof trusses: King post, queen post etc. related terms, sizes construction etc.
21	Exercises on simple floor construction and joints used therein. Exercises on partition construction. Repairing practice: Repair and reconditioning of 1.Hand tools and equipments. 2.Furniture, doors and windows..	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 etc. used in carpentry work. Economical factors and material estimate.
22	INDUSTRIAL VISIT	
23-24	RIVISION	
25-26	FINAL EXAMINATION	

Achievements:

1. Trainees will be able to operate various wood working machines.
2. Trainees will have an knowledge about different types of pattern and will be able to make simple

3. wooden patterns like core and core boxes.

4. 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.

3.Trainees will be able to operate the carpentry CNC machines.

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Syllabus for the trade of " CARPENTER " under C.T.S.

Draft Syllabus on Workshop Science &Calculation

Duration six Months

Second Semester

Week No	***Workshop Science calculation***
1	Introduction and discussion on CTS 2nd semester syllabus.
2	Moment or forces simple problems on straight and bell crank levers.
3	Mass, volume, density, weight C.G.S., M.K.S. and F.P.S units of force weight etc .their conversion shop problems.
4	Effect of forces on materials in such application as extending, bending, twisting, shearing etc meaning of stress and strain.
5	Meaning of stress, strain and modulus of elasticity.
6	Do
7	Meaning of tenacity ,elasticity ,malleability ,brittleness ,hardness, Ductility and examples.
8	Ratio and proportion: Ratio; finding terms and ratio; proportions; direct proportion and indirect proportion.
9	Application of ratio and proportion to shop problem. Mixed direct and indirect proportions problem.
10	Algebraic symbols and fundamental algebraic operations. Sign and symbols used in algebra; co-efficient, terms, like and unlike terms.
11	Algebraic addition, subtraction, multiplication and division. Power and exponent, laws and exponent.
12	Algebraic simple problem. Factor and equations algebraic formula and its application.
13	Electrical and its uses:- Electric current-positive and negative terminals, use of fuses and switches, conductor and insulators.
14	Factors and different types of factorization.
15	Equations-simple-simultaneous quadratic application, construction and solution of problems and equations.
16	Different form of energy-heat, mechanical and electrical-examples, conversion

	from one form to another.
17 18	Pythagoras theorem, circle and properties of circle, polygons application of geometric to shop problems.
19	Menstruation Triangles, square, rectangle, parallelogram, trapezium, trapezoid, regular polygon, circle, hollow circle.
20	Sector of circle, segment of circle, ellipse and fillet.
21	Solid figures-prism, cylinder, pyramid, cone, sphere, spherical segment, material weight, and cost shop problems. Practice on simple pocket calculator.
22	REVISION
23-24	INDUSTRIAL VISIT
25-26	FINAL EXAMINATION

Achievement :

1. Trainees able to know mechanical engineering basic science.
2. Trainees able to know algebraic problem.
3. Trainees able to know different maturational problems.

Syllabus for the trade of " CARPENTER " under C.T.S.

Draft Syllabus on Engineering Drawing

Duration six Months

Second Semester

Week No	Engineering Drawing
1	Introduction and discussion regarding importance of orthographic projection.
2	Importance of sectioning on drawing standard methods (full and half section, revolved and removed section, location as par IS code).
3	Sectioned –freehand sketches to represent the different sectional view in the given orthographic drawing of parts with the support of models e.g. Simple hollow blocks and simple castings with dimensions.
4	-Do-
5	How to convert isometric to orthographic and orthographic to isometric. Drawing related problem for freehand sketches for trade related simple parts or exercises.
6	Do
7	-Do-
8	Freehand sketches of standard rivet from as par I.S. welding symbols as par I.S.code employed on drawing.
9	Do
10	Standard forms of key cotters.
11 12	Freehand sketches to study the method of surface development of simple geometrical solids like cube, cone ,prism ,pyramids ,rectangular block etc.
13	Do
14	Screw thread forms as par I.S. convectional application of internal and external screw thread-freehand sketches of nuts, bolts ,screw etc.
15	Do
16 17 18	Basic CAD drawing on 3D.
19 20	Importance of blue print reading-guideline, how to read-simple blue print exercises reading related to missing lines ,missing views, missing dimension, missing section, identification of surface symbols etc.
21	Solution of NCVT test papers.

22	REVISION
23-24	INDUSTRIAL VISIT
25-26	FINAL EXAMINATION

Achievement:

1. Able to draw the orthographic projection.
2. Able to draw sectioning on drawing with standard method.
3. Able to draw isometric to orthographic and orthographic to isometric view.
4. Able to make surface development.
5. Able to use AUTO CAD on 3D.

CTS (GENERAL CARPENTER)

LIST OF TOOLS AND EQUIPMENT

FOR

A UNIT OR BATCH OF 16 TRAINEES

1ST SEMESTER

For Individual tool kit: - for 16 Trainees - 16 Sets.

ONESet may be kept for Instructor –

(For demonstration) - 1 Set.

Three Sets may be kept for reserve - 3 Set.

A)For Extra trainers.

B)For replacement.

C)For any other skilled worker for Repairing work, maintenance Work etc.

Total: 20 Sets.

Sr.No	Name of the tools & equipment as per the syllabus	No.reqd.for Instr.&Trainees for one Unit asper DGET norms
1	Foot rule (two ft. Four fold)/ steel rule	20
2	MARKING KNIFE, 200 MM. LENGTH	20
3	CARPENTER SQUARE 200 MM	20

4	SQUARE, BEVEL 50 MM.	20
5	CARPENTER MAKING GAUGE	20
6	CARPENTER MORTICE GAUGE	20
7	SAW HAND 450 MM.	20
8	SAW TENON 300 MM.	20
9	PLANE, JACK METAL 335 MM. X 50 MM CUTTER	20
10	PLANE SMOOTHING, METAL 200 MM. X 50 MM CUTTER.	20
11	CHISEL, FIRMER (BEVEL) EDGE 6 MM. 10,15,20 AND 25 MM.WIDTH (5 NOS.)	20
12	CHISEL, MORTICE, 06,10,15 MM. (3 NOS)	20
13	SCREW DRIWER 300 MM. (CABNIT MAKER)	20
14	MALLET MEDIUM SIZE	20
15	CLAW HAMMER 500 GR.	20
16	OILSTONE(CARBORUNDUM) UNIVERSAL SILICON CARBITE COMBINATIONROUGH AND FINE 200X 50X25 MM	20
17	HAND BRUSH FOR BENCH CLEANING 450 MM.	20
18	COMPUTER WITH LCD PROJECTOR	01

TOOLS: EQUIPMENT AND GENERAL OUTFIT

1ST SEMESTER

01	MEASURING TAPE 3 METER	01
02	CONTRUCTION SCALE 1 METER	04
03	SPRING CALIPER INSIDE 150 MM	04
04	SPRING CALIPER OUT SIDE	04
05	WING COMPASS 300 MM.	02
06	TRAMMEL	02 PAIR
07	SPRIT LEVEL 300 MM.	02
08	RIP SAW 600 MM.	04
09	CROSS CUT SAW MM	02
10	KEY HOLE SAW 250 MM.	02
11	FRET SAW FRAME 150 MM.	02
12	COMPASS SAW 350 MM.	04
13	ADZE 15 KG.	04
14	TRYING PLANE METAL 450 MM. X 60 MM. CUTTER	02
15	PLANE RAVVET ADJUSTABLE 250 MM. X METERS X 9 MM. CUTTERS.	04
16	. PLOUGH PLANE WITH SET OF 8 CUTTER UP TO 12 MM. WIDTH	04
17	SPOKE SHAVES 50 MM. CUTTER	08

18	PLANE ADJUSTABLE CIRCULAR 250 MM	04
19	ROUTER PLANE	04
20	MOULDING PLANE SET	04
21	CABINET SCREPER 100 MM.	04
22	GAUGE CHISEL, FIRMER, 6,10,12,16,20,MM	08 SETS.
23	GAUGE CHISEL, SCRIBING 6,10,12,16,20,MM.	08 SETS.
24	BALL PEIN HAMMER 600 GRS.	04
25	CROSS PEIN HAMMER 600 GRS	04
26	SCREW DRIVER 450 MM.	04
27	SCREW DRIVER 250 MM.	04
28	SCREW DRIVER 150 MM.	04
29	PINCER 50 MM.	04
30	FILE HALF ROUND 2 ND CUT 250 MM.	08
31	FILE HALF ROUND WOOD RASP BASTAD MM.	08
32	FILE SLIM TAPER 100 MM	12
33	FILE SLIM TAPER 150 MM.	12
34	CARD FILE (STEEL) WIRE BRUSH FOR FILE	04
35	HANDS DRILL 6 MM. CAPACITIES	08
36	COUNTRY DRILL WITH BOW (BALL BEARING TYPE)	04

37	RATCHEL BRACE 250 MM. SWAP	04
38	HAND AUGER 10,12,14,16,18,20,22,25 MM.	02 SETS.
39	CENTRE BITS 6,8,10,12.	02 SETS.
40	EXPANSION BIT SETS.	02 SETS.
41	TWIST DRILL BITS 6,8,10,12, MM	02 SETS.
42	COUNTER SINK BIT ROSE TYPE 12 MM.	04
43	BREAST DRILL 6 MM.CAPACITY	02
44	CENTRE PUNCH 5	04
45	SNIP STRAIGHT 200 MM.	04
46	OIL CANS COMBINATION SIDE CUTTING PLIERS.	02
46	PLUNGER SAW SET / PISTOL GRIP TYPE.	02
47	NUMBER PUNCH 12 MM.	02 SETS.
48	SLIP STONE 100 MM.	08
49	ROUND CROW BAR WITH CHISEL AND CLAW END 1070 X 25 MM.	02
50	. ‘ G’ CLAMP 100.	08
51	‘G’ CLAMP 150 MM.	08
52	‘G’ CLAMP 250 MM.	04
53	‘T’ BAR CRAMP 0.6 METER.	08
54	‘T’ BAR CRAMP 1.25	04

	METER.	
55	‘T’ BAR CRAMP 1.75 METER.	02
56	CARPENTER VICE 250 MM JAWS.	16
57	SAW SHARPWNING VICE 250 JAWS.	02
58	CARVING TOOLS SET.	04 SETS.
59	GOGGLES PAIR.	02
60	GLASS CUTTER.	02
61	NAIL PUNCH.	04
62	SURFACE PLATE 600 X 600 MM.	01
63	CARPENTER’S WORK BENCH 2400X920X800 MM. HEIGHT	08
64	OIL CAN.	04
65	STEEL LOCKERS, 8 COMPARTMENTS, WITH INDIVIDUAL LOCKS. 1980 X 910 X 480 MM DEPTH.	02
66	STEEL ALMIRAH WITH SHELVES 1980 X 910 X 480 MM DEPTH	02
67	INSTRUCTOR TABLE (HALF SECRETARIATE)	01
68	INSTRUCTOR CHAIR.	02
69	STOOL.	01
70	CHALK BOARD WITH EASEL.	
71	METERIAL RACK.	01
72	PORTABLE CIRCULAR SAW MACHINE	02

72	PORTABLE PLANING MACHINE	02
72	POWER DRILL MACHINE	02
73	PORTABLE SANDER MACHINE	01
74	PORTABLE JIG SAW MACHINE	02
75	PORTABLE ROUTER MACHINE	01
76	POWER SCREW DRIVER	02

ALONG WITH THE TOOLS AND EQUIPMENTS OF 1ST SEMESTER

GENERAL INSTALLATION AND ACCESSORIES

FOR SECOND SEMESTER

01	COMBIND SURFACER AND THICKNER.	01
02	CIRCULAR SAW MACHINE 3.00 MM.DIA.	01
03	'LATHE, WOOD TURNING.' 150 MM HEIGHT OF CENTRES 1.75-METER BED, MOTORISED COMPLETE WITH A SET OF TURNING TOOLS.	03
04	SET OFTURNING TOOLS FOR ABOVE LATHE MACHINE	03 SETS
05	TENONING MACHINE (SINGLE ENDED)	01
06	MORTISING MACHINE (COMBINE HOLLOW CHISEL AND CHAIN)	01
07	BENCH RINDER 200 MM.WHOLE D.E. PEDESTAL	01
08	DRILL MACHINE 12 MM. CAPACITY	01
09	PORTABLE ELECTRIC DRILL 6 MM. CAPACITY (WOIF TYPE)	01

10	DRILLS CHUCK 12 MM CAPACITIES.	01
11	PORTABLE DISCSANDER 200 MM. DIA	01
12	ADJUSTABLE SAW SHARPENER	01
13	. ELECTRIC HEATER 1000/1500 W 1 NOS.102. ELECTRIC BLOWER (PERTABLE)	01
14	MOISTURE METER	01
15	GREESE GUN.	01
16	SPANNER DOUBLE ENDED SET OF 14	01 NO. OF SET
17	UNIVERSAL WOOD WORKING MACHINE	01
18	ELECTRICAL DRYING OVEN (SMALL TYPE).	01
19	BAND SAW MACHINE WITH PROVISION.	01
20	FIRE EXTINGUISHER.	01
21	FIRE BUCKETS.	04

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 lockers.
2. The trainee for the main trade will be sent to the different sections for allied trade training. Separate list of tools and equipment required for allied trades are not included in this list.