

CARPENTER

COMPETENCY BASED CURRICULUM

(Duration: 2 Yrs.)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL- 5



SECTOR – CONSTRUCTION



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

Carpenter

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(Revised in 2018)

APPRENTICESHIP TRAINING SCHEME (ATS)



NSQF LEVEL - 5

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Developed By

Ministry of Skill Development and Entrepreneurship
Directorate General of Training
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Apprenticeship Training Scheme under Apprentice Act 1961

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart Apprenticeship Training on the job in industry to school leavers and person having National Trade Certificate(ITI pass-outs) issued by National Council for Vocational Training (NCVT) to develop skilled manpower for the industry. There are four categories of apprentices namely; **trade apprentice, graduate, technician and technician (vocational) apprentices.**

Qualifications and period of apprenticeship training of **trade apprentices** vary from trade to trade. The apprenticeship training for trade apprentices consists of basic training followed by practical training. At the end of the training, the apprentices are required to appear in a trade test conducted by NCVT and those successful in the trade tests are awarded the National Apprenticeship Certificate.

The period of apprenticeship training for graduate (engineers), technician (diploma holders and technician (vocational) apprentices is one year. Certificates are awarded on completion of training by the Department of Education, Ministry of Human Resource Development.

1.1 Changes in Industrial Scenario

Recently we have seen huge changes in the Indian industry. The Indian Industry registered an impressive growth during the last decade and half. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

Reformation

The Apprentices Act, 1961 has been amended and brought into effect from 22nd December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

- Prescription of number of apprentices to be engaged at establishment level instead of trade-wise.

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- Establishment can also engage apprentices in optional trades which are not designated, with the discretion of entry level qualification and syllabus.
- Scope has been extended also to non-engineering occupations.
- Establishments have been permitted to outsource basic training in an institute of their choice.
- The burden of compliance on industry has been reduced significantly.



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2.1 GENERAL

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

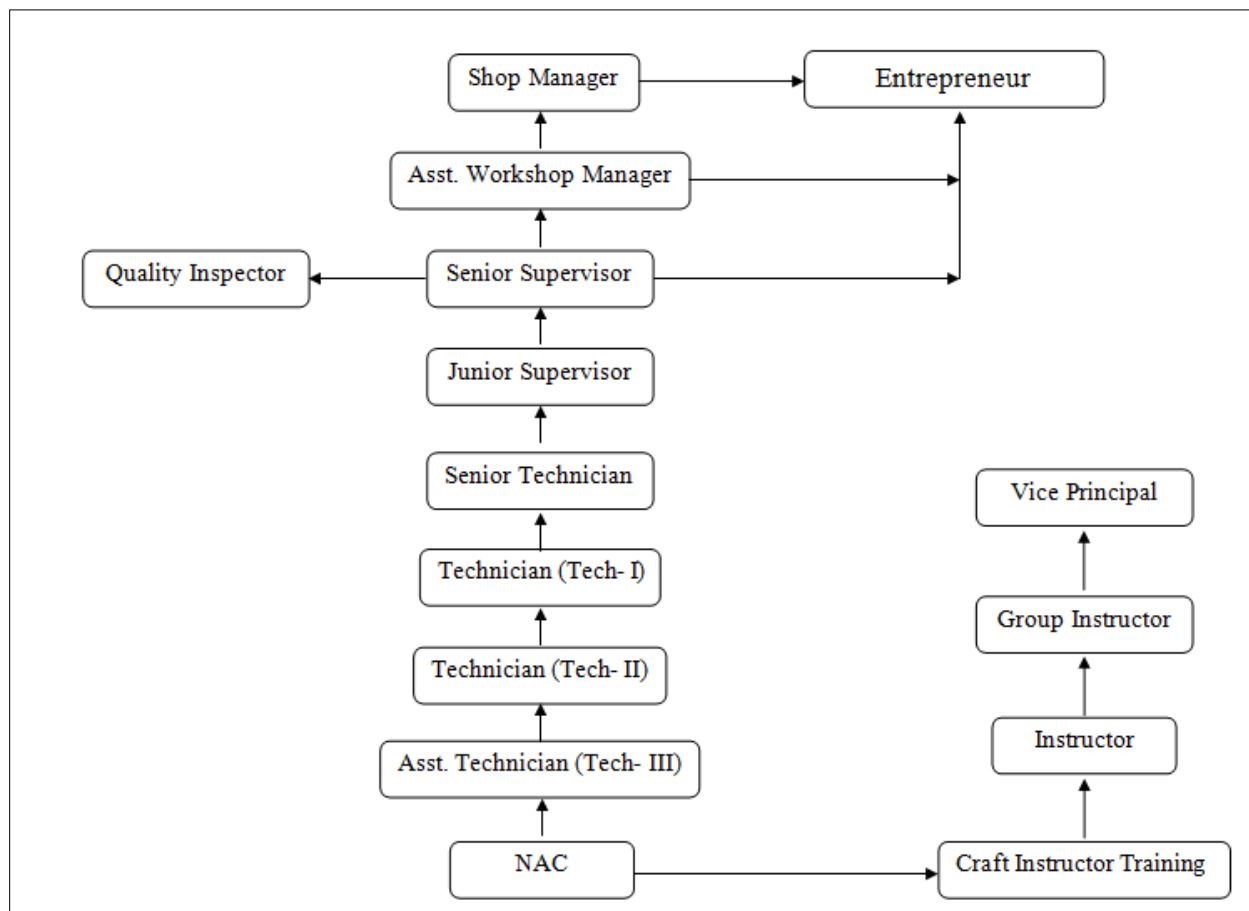
Carpenter trade under ATS is one of the most popular courses delivered nationwide through different industries. The course is of two years (02 Blocks) duration. It mainly consists of Domain area and Core area. In the Domain area Trade Theory & Practical impart professional - skills and knowledge, while Core area - Workshop Calculation and science, Engineering Drawing and Employability Skills imparts requisite core skills & knowledge and life skills. After passing out the training programme, the trainee is being awarded National Apprenticeship Certificate (NAC) by NCVT having worldwide recognition.

Broadly candidates need to demonstrate that they are able to:

- Read & interpret technical parameters/document, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge, core skills & employability skills while performing jobs and solve problem during execution.
- Check the job/assembly as per drawing for functioning, identify and rectify errors in job/assembly.
- Document the technical parameters related to the task undertaken.

2.2 CAREER PROGRESSION PATHWAYS:

- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.
- Indicative pathways for vertical mobility.



2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of two years (*Basic Training and On-Job Training*): -

Total training duration details: -

Time (in months)	1-3	4-12	13-15	16-24
Basic Training	Block – I	-----	Block – II	-----
Practical Training (On - job training)	----	Block – I	-----	Block – II

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A. Basic Training

For 02 yrs. course (Engg.):-(**Total 06 months:** 03 months in 1styr. + 03 months in 2nd yr.)

For 01 yr. course (Engg.):-(**Total 03 months:** 03 months in 1styr.)

S No.	Course Element	Total Notional Training Hours	
		For 02 Yrs. course	For 01 Yr. course
1.	Professional Skill (Trade Practical)	550	275
2.	Professional Knowledge (Trade Theory)	240	120
3.	Workshop Calculation & Science	40	20
4.	Engineering Drawing	60	30
5.	Employability Skills	110	55
	Total (Including internal assessment)	1000	500

B. On-Job Training:-

For 02 yrs. Course (Engg.) :-(**Total 18 months:** 09 months in 1styr. + 09 months in 2nd yr.)

Notional Training Hours for On-Job Training: 3120 Hrs.

For 01 yr. course (Engg.) :-(**Total 12 months**)

Notional Training Hours for On-Job Training: 2080 Hrs.

C. Total training hours:-

Duration	Basic Training	On-Job Training	Total
For 02 yrs. course (Engg.)	1000 hrs.	3120 hrs.	4120 hrs.
For 01 yr. course (Engg.)	500 hrs.	2080 hrs.	2580 hrs.

2.4 ASSESSMENT & CERTIFICATION:

The trainee will be tested for his skill, knowledge and attitude during the period of course and at the end of the training programme as notified by Govt of India from time to time. The Employability skills will be tested in first two semesters only.

a) The **Internal assessment** during the period of training will be done by **Formative assessment method** by testing for assessment criteria listed against learning outcomes. The training institute have to maintain individual *trainee portfolio* as detailed in assessment guideline (section-2.4.2). The marks of internal assessment will be as per the template (Annexure – II).

b) The final assessment will be in the form of summative assessment method. The All India Trade Test for awarding NAC will be conducted by NCVT on completion of course as per guideline of Govt of India. The pattern and marking structure is being notified by govt of India from time to time. **The learning outcome and assessment criteria will be basis for setting question papers for final assessment. The examiner during final examination will also check individual trainee's profile as detailed in assessment guideline (section-2.4.2) before giving marks for practical examination.**

2.4.1 PASS REGULATION

The minimum pass percent for Practical is 60% & minimum pass percent for Theory subjects 40%. The candidate pass in each subject conducted under all India trade test.

2.4.2 ASSESSMENT GUIDELINE

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

Assessment will be evidence based comprising the following:

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

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

Performance Level	Evidence
(a) Weightage in the range of 60 -75% to be allotted during assessment	
For performance in this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.	<ul style="list-style-type: none"> • Demonstration of good skill in the use of hand tools, machine tools and workshop equipment • Below 70% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A fairly good level of neatness and consistency in the finish • Occasional support in completing the project/job.
(b)Weightage in the range of above75% - 90% to be allotted during assessment	
For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.	<ul style="list-style-type: none"> • Good skill levels in the use of hand tools, machine tools and workshop equipment • 70-80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A good level of neatness and consistency in the finish • Little support in completing the project/job
(c) Weightage in the range of above 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	<ul style="list-style-type: none"> • High skill levels in the use of hand tools, machine tools and workshop equipment • Above 80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

Brief description of Job roles:

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

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

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

Perform TPM (Total Production Management), TQM (Total Quality Management) and record keeping system.

Reference NCO:

1. NCO-2015: **7115.0100**
2. NCO-2015: **7115.0200**

NSQF level for Carpenter trade under ATS: **Level 5**

As per notification issued by Govt. of India dated- 27.12.2013 on National Skill Qualification Framework total 10 (Ten) Levels are defined.

Each level of the NSQF is associated with a set of descriptors made up of five outcome statements, which describe in general terms, the minimum knowledge, skills and attributes that a learner needs to acquire in order to be certified for that level.

Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are:

- a. Process
- b. Professional knowledge,
- c. Professional skill,
- d. Core skill and
- e. Responsibility.



The Broad Learning outcome of Carpenter trade under ATS mostly matches with the Level descriptor at Level- 5.

The NSQF level-5 descriptor is given below:

LEVEL	Process required	Professional knowledge	Professional skill	Core skill	Responsibility
Level 5	Job that requires well developed skill, with clear choice of procedures in familiar context.	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problem by selecting and applying basic methods, tools, materials and information.	Desired mathematical skill, understanding of social, political and some skill of collecting and organizing information, communication.	Responsibility for own work and Learning and some responsibility for other's works and learning.

Name of the Trade	CARPENTER
NCO-2015	7115.0100, 7115.0200
NSQF Level	Level – 5
Duration of Apprenticeship Training (Basic Training + On-Job Training)	Two years (02 Blocks each of one year duration).
Duration of Basic Training	a) Block – I : 3 months b) Block – II : 3 months Total duration of Basic Training: 6 months
Duration of On-Job Training	a) Block–I: 9 months b) Block–II : 9 months Total duration of Practical Training: 18 months
Entry Qualification	Passed 10 th Class with Science and Mathematics under 10+2 system of Education or its equivalent
Selection of Apprentices	The apprentices will be selected as per Apprenticeship Act amended time to time.
Instructors Qualification for Basic Training	As per ITI instructors qualifications as amended time to time for the specific trade.
Infrastructure for Basic Training	As per related trades of ITI.
Examination	The internal examination/ assessment will be held on completion of each block. Final examination for all subjects will be held at the end of course and same will be conducted by NCVT.
Rebate to Ex-ITI Trainees	01 year
CTS trades eligible for Carpenter Apprenticeship	1. Carpenter 2. Carpenter Construction.

Note:

- Industry may impart training as per above time schedule for different block, however this is not fixed. The industry may adjust the duration of training considering the fact that all the components under the syllabus must be covered. However the flexibility should be given keeping in view that no safety aspects is compromised.
- For imparting Basic Training the industry to tie-up with ITIs having such specific trade and affiliated to NCVT.

6.1GENERIC LEARNING OUTCOME

The following are minimum broad Common Occupational Skills/ Generic Learning Outcome after completion of the Carpenter course of 02 years duration under ATS.

Block I & II:-

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Understand and explain different mathematical calculation & science in the field of study including basic electrical. [*Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, graph, Statistics, Centre of gravity, Power transmission, Pressure*]
3. Interpret specifications, different engineering drawing and apply for different application in the field of work. [*Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components & different thread forms, Assembly drawing, Sectional views, Estimation of material, Electrical & electronic symbol*]
4. Select and ascertain measuring instrument and measure dimension of components and record data.
5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.
8. Plan and organize the work related to the occupation.

6.2 SPECIFIC LEARNING OUTCOME

Block – I

1. Understand, interpret and apply the measuring, marking and testing instrument and other useable hand Tools with specific safety precaution.
2. Understand and select the Timber, growth of timber trees, function and identification of timber, defects and diseases of timber.
3. Understand, interpret and apply various saws or portable power saw machines for Ripping, cross cutting, oblique sawing and curve cutting etc .with maintenance and with supporting devices.
4. Analyze the surface finish with exact sizing with identify and apply various shaving tools or portable power planing machine by planing operation on straight and on curve surface with supporting devices.
5. Understand, interpret and apply various paring tools and analyze and choose the positioning and employing holding device for chiselling with better finish with holding devices.
6. Understand, interpret and apply various striking tools and Workshop appliances, i.e. work bench, bench vice, bench hook, bench stop shooting board, MITRE board etc.
7. Understand, interpret and classified various types of joints i.e. Angle joints, Framing joints, Broadening joints and Lengthening joints. Analyse and prepare the correct joint at correct position, related with strength and appearance.
8. Selection and application on various methods of Seasoning of timber.
9. Selection and application knowledge on various method of Preservation of timber.
10. Application of various types of boring tools and various types of Bits.
11. Selection and application knowledge on various method of Conversion of timber.
12. Make small wooden job as per drawing with schedule sizes of timber or alternatives of timber i.e. FRP, MDF, FOAM using various hardware. And Uses of electrical portable jig saw, portable disc sander, portable electrical drill machine..
13. Analyze and identify various carving tools to convert a wooden block/ piece into a decorative articles used in interior furniture.
14. Preparation of wooden items through surface finishing, staining with using various application of preservatives through polishing, varnishing etc.

Block – II

15. Prepare ripping, cross cutting, curve cutting etc. on band saw / circular saw machine and grinding and setting of blade/ cutter.
16. Prepare different operations on planing machine along with sharpening blades. (Range of operations – Surfacing, thickening, chamfering, edge bending etc.)
17. Prepare working on pedestal grinding (Range of operations – grinding of mushroom head, cutting edge of tools, drills, etc.)
18. Make holes of different sizes in correct location on wood work.
19. Prepare different operations on wood turning lathe along with sharpening of cutting tools.
20. Prepare different operations on Tenon and mortise machine.
21. Identify and prepare different types of pattern, core box, core print etc. for moulding application with proper allowances and colour codes.
22. Prepare different types of building works such as door & window frame & shutters, floor construction, staircase, roof truss etc.
23. Prepare different operations of fitting work including fitting fixing, glass and check for functionality.
24. Prepare different repairing technique of different type of furniture operations'
25. Prepare estimation of different wooden item of works.

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

7. LEARNING OUTCOME WITH ASSESSMENT CRITERIA

GENERIC LEARNING OUTCOME	
LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Recognize & comply safe working practices, environment regulation and housekeeping.	1. 1. Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements.
	1. 2. Recognize and report all unsafe situations according to site policy.
	1. 3. Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1. 4. Identify, handle and store / dispose off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.
	1. 5. Identify and observe site policies and procedures in regard to illness or accident.
	1. 6. Identify safety alarms accurately.
	1. 7. Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	1. 8. Identify and observe site evacuation procedures according to site policy.
	1. 9. Identify Personal Productive Equipment (PPE) and use the same as per related working environment.
	1. 10. Identify basic first aid and use them under different circumstances.
	1. 11. Identify different fire extinguisher and use the same as per requirement.
	1. 12. Identify environmental pollution & contribute to avoidance of same.
	1. 13. Take opportunities to use energy and materials in an environmentally friendly manner
	1. 14. Avoid waste and dispose waste as per procedure
	1. 15. Recognize different components of 5S and apply the same in the working environment.
2. Understand, explain different mathematical calculation & science in	2.1 Explain concept of basic science related to the field such as Material science, Mass, weight, density, speed, velocity, heat & temperature, force, motion, pressure,

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<p>the field of study including basic electrical and apply in day to day work. [Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, graph, Statistics, Centre of gravity, Power transmission, Pressure]</p>	heat treatment, centre of gravity, friction.
	2.2 Measure dimensions as per drawing
	2.3 Use scale/ tapes to measure for fitting to specification.
	2.4 Comply given tolerance.
	2.5 Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.
	2.6 Ensure dimensional accuracy of assembly by using different instruments/gauges.
	2.7 Explain basic electricity, insulation & earthing.
<p>3. Interpret specifications, different engineering drawing and apply for different application in the field of work. [Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components & different thread forms, Assembly drawing, Sectional views, Estimation of material, Electrical & electronic symbol]</p>	3. 1. Read & interpret the information on drawings and apply in executing practical work.
	3. 2. Read & analyse the specification to ascertain the material requirement, tools, and machining /assembly /maintenance parameters.
	3. 3. Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.
<p>4. Select and ascertain measuring instrument and measure dimension of components and record data.</p>	4.1 Select appropriate measuring instruments such as micrometers, verniercalipers, dial gauge, bevel protector and height gauge (as per tool list).
	4.2 Ascertain the functionality & correctness of the instrument.
	4.3 Measure dimension of the components & record data to analyse the with given drawing/measurement.

5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	5.1 Explain the concept of productivity and quality tools and apply during execution of job.
	5.2 Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.
	5.3 Knows benefits guaranteed under various acts
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	6.1 Explain the concept of energy conservation, global warming, pollution and utilize the available recourses optimally & remain sensitive to avoid environment pollution.
	6.2 Dispose waste following standard procedure.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	7. 1. Explain personnel finance and entrepreneurship.
	7. 2. Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	7. 3. Prepare Project report to become an entrepreneur for submission to financial institutions.
8. Plan and organize the work related to the occupation.	8. 1. Use documents, drawings and recognize hazards in the work site.
	8. 2. Plan workplace/ assembly location with due consideration to operational stipulation
	8. 3. Communicate effectively with others and plan project tasks
	8. 4. Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.
SPECIFIC OUTCOME	
<u>Block-I & II (Section:10)</u>	
<p><i>Assessment Criteria i.e. the standard of performance, for each specific learning outcome mentioned under block – I & block – II(section: 10) must ensure that the trainee achieves well developed skill with clear choice of procedure in familiar context. Assessment criteria should broadly cover the aspect of Planning (Identify, ascertain, estimate etc.); Execution (perform, illustration, demonstration etc. by applying 1) a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information 2) Knowledge of facts, principles, processes, and general concepts, in</i></p>	

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a field of work or study 3)Desired Mathematical Skills and some skill of collecting and organizing information, communication) and **Checking/ Testing** to ensure functionality during the assessment of each outcome.The assessments parameters must also ascertain that the candidate is responsible for own work and learning and some responsibility for other's work and learning.



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BASIC TRAINING (Block – I)**Duration: (03) Three Months**

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1.	<p>Familiarization with the workshop:</p> <ol style="list-style-type: none"> 1. Wood working sections and wood working machine shop .show different exercises / jobs done by the trainees in the previous year batches etc. 2. Show different audio – visual aids, library, show room etc. 3. Identification and Familiarization of hand tools. 4. Demonstration and use of measuring, marking and testing tools. 	<p>Safety precautions: 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</p> <p>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.</p>
2.	<ol style="list-style-type: none"> 5. Sawing practice : - use of different types of the saws Ripping, cross cutting, curvecutting, oblique sawing etc.; 6. Use of the bench hook, bench vice, bench stop etc. 7. Sharpening and the setting of the different types of the saws. <p>Hand Tools and portable power tools - curve cutting saws:</p> <ol style="list-style-type: none"> 8. Compass saw, coping saw, bow saw, and fret saw etc. - description, types, size, use, care and maintenance. 9. Sharpening and setting of saws. Portable circular saw and its uses. 	<p>Saw and the Plane: description, types, sizes, setting, sharpening, uses, etc.</p> <p>Special saws - Compass saw, coping saw, Bow saw, fret saw portable circular saw.</p>
3.	<p>Planning practice</p> <ol style="list-style-type: none"> 10. Demonstration and uses of the planes. 11. Setting of the plane holding, planning techniques. Planning face side, face edge, use of marking gauge etc. 	<p>Different types of Plane: description, types, sizes, setting, sharpening, uses, etc.</p> <p>Special planes:-Compass plane Moulding plane, Rebate plane, Grooving plane etc. - description, type, size, use, care and maintenance. Portable power planer</p>

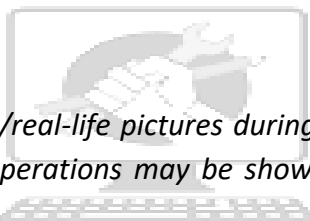
	<p>12. Testing of the accuracy, flatness and twistness of the surface.</p> <p>13. Use of straight edge, bench stop, try square, winding strips, cross planning, edge planning etc.</p> <p>14. Grinding and sharpening of the plane blades.</p> <p>15. Application of Portable power planer machine.</p>	<p>machine and its uses</p>
4.	<p>Chiseling Practice And multiple chiseling practice:</p> <p>16. Demonstration and use of different types of</p> <p>17. Chisels.</p> <p>18. Chiseling along the grain, across the grain of the vertical, horizontal etc.</p> <p>19. Grinding, sharpening and honing of chisel.</p> <p>20. Holding tools - Clamps, 'G' or 'C' clamp or cramp, sash /'T' bar cramps , saw sharpening vice, carpentry vice etc.</p>	<p>Hand tools (paring tools);: Different types of The chisels ,description , sizes, uses. Grinding, sharpening & honing etc.</p> <p>Striking tools - Hammers, mallets etc.</p> <p>Workshop appliances : work bench, bench vice, bench hook, bench stop shooting board, MITRE board etc. - types, sizes , uses etc.</p>
5	<p>Joint practice:-</p> <p>21. 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. (any three of the tenon and mortise joint)</p>	<p>Classification and grading of timbers as per ISI. Typesof the grains. Joineries: Classification of joint (framing, Angle broadening and the lengthening)</p> <p>Framing Joints:-Halving, Mortise and tenon joints, Bridle joints- description, types and uses.</p>
6	<p>Demonstration and making Dovetail joints –Housing joints</p> <p>22. Dovetail joints-</p> <p>23. Dovetail marking and its applications. Single dovetail, Common dovetail, lapped dovetail, secret mitre dovetail joints, use of dovetail template etc. (any three)</p>	<p>Angle joint: - Description, types size, uses etc.</p> <p>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.</p>
7	<p>Broadening joints:</p> <p>24. Demonstration and making different types of broadening joints.</p>	<p>Broadening joints - description, types, and uses. Adhesives - types, uses etc.</p>

	<p>25. Simple butt, riveted butt, pocket screw, secret pocket butt joint, glued butt, tongue and groove joints etc.</p> <p>Lengthening joints demonstration and making:</p> <p>26. Different types of scarf joints - Table scarf, bevel scarf etc.</p>	<p>Lengthening joints:</p> <p>Different types of scarf joints – Description and types of Table scarf, bevel scarf, tension scarf etc.</p>
8	<p>27. A frame of using different type of joints - Small article involving above joints may be made.</p> <p>28. Simple wooden furniture making work: Demonstration and practice on -</p> <p>29. Making a small wall bracket. Prepare chalk box. Tea tray or office Tray.</p>	<p>Preservation of timber: Chemical treatment of timber - types, process etc. and preservatives used.</p> <p>Files: Types, grades, uses, care and maintenance.</p> <p>Uses of electrical portable jig saw , portable disc sander, portable electrical drill machine.</p>
9	<p>Application of boring tools:</p> <p>30. Use of country drill, hand drill, ratchet brace, breast drill. Portable electric drill machine and its uses.</p> <p>31. Use of different types of drill bits, hand augur, layout of a stool and make cutting list.</p> <p>32. Prepare a standard height. Taper legged stool as per lay out. Use of Adhesives.</p>	<p>Boring tools :</p> <p>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.</p>
10.	<p>33. Demonstration and make layout of different furniture.</p> <p>34. Making notice board or display board. Use of hard board, ply wood and insulation board. Making a small rack/modern wall unit.</p>	<p>Description of timbers used in furniture making work: - Teak, Sal, Deodar and other wood as available in the local market.</p> <p>Conversion of timber :</p> <p>Parallel sawing, radial sawing, quarter sawing, tangential sawing etc.</p> <p>Design of Furniture's for different purpose:- Bed room, dining Hall, Library, Office, Work-shop, Class room.</p>
11	<p>35. Wood carving exercises and use of carving tools and their sharpening.</p>	<p>Tools required for carving ornamental works. Properties of wood. Preparation of bill of materials and simple estimation.</p>

12	<p>36. 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.</p> <p>37. Furniture polishing:- Demonstration on how to make French polish, use of French polish and wax polish. Remove the polish and Re-polishing old furniture.</p>	<p>Method of preparation of surface for staining, tools and equipment required.</p> <p>Sand paper - types, grades, size & uses. Portable sander machine and uses. Preparation of putty and use.</p> <p>Staining:-Type, process, methods and staining materials. Different staining methods applied for different timber.</p> <p>Description of French polish, wax polish, types and uses. Estimation of timber</p>
13	<p>Revision</p> <p>Internal Assessment/Examination 03days</p>	

NOTE: -

More emphasis to be given on video/real-life pictures during theoretical classes. Some real-life pictures/videos of related industry operations may be shown to the trainees to give a feel of Industry and their future assignment.



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BASIC TRAINING (Block – II)**Duration: (03) Three Months**

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1-2	<p>38. Introduction & demonstration, operational techniques of wood working machines. Uses of:-</p> <p>A) Band saw: - remove and refit of band saw blades setting and grinding and different Operation: -Ripping, Cross-cutting, curve cutting, beveling, chamfering etc.</p> <p>B) Circular Saw: - Ripping, cross cutting, rebating, grooving etc.</p> <p>C) Planning Machine :- Surfacing, thicknessing, chamfering, edging beveling etc,</p> <p>D) Wood Turning lathe: - Use of turning tools, plain turning, taper turning and Turning different articles- Chisel handles, table lamp stand etc. Use of face plate, chuck etc.</p>	<p>Wood working machines: Description, types, sizes, parts, functions, operations. Safety precautions, care and maintenance. Oiling, greasing etc. of the following machines:</p> <p>A) Band Saw B) Circular saw C) Planning machine D) Wood Turning Lathe with Turning tools. Market form of timber. Conversion of timber method, advantages, disadvantages.</p>
3-4	<p>39. Demonstration and use of following-</p> <p>A) Drilling Machine: Use of straight shank drills, taper shank drills, counter sinkingbits etc.</p> <p>B) Grinding Machines:- Grinding of different types of tools, cutters, materials for jobs.</p> <p>C) Mortiser Machine.</p> <p>D) Universal wood working Machine.</p>	<p>Description, types, sizes, parts, functions, operations, safety precautions, care and maintenance etc. of the following machines-</p> <p>A) Drilling Machine. B) Grinding Machine. C) Mortiser Machine. D) Universal wood working Machine. Calculation of timber – weight, area, volume etc</p>
5	<p>Exercises.</p> <p>40. Identification of pattern making hand tools, use of contraction rule, show different type of pattern.</p> <p>41. 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.)</p> <p>42. Layout of split patterns.</p> <p>43. Marking and making split patterns. Making dowels for above pattern.</p> <p>44. Use of dowel pin. Use of nail, screws etc. Making templates.</p>	<p>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.</p> <p>Split patterns -Types and uses. Dowel- types, size and uses in pattern making work.</p>

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	45. Use required machine wherever necessary.	
6	46. 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.
7-8	CARPENTRY BUILDING WORK 47. Revision of basics joints related with carpentry building work. 48. Marking and making door frame and door shutter. Making panel door, glazed shutter and fitting mouldings after fitting glass. 49. 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 used in industries as substitute of wood. Characteristics of material, Mechanical properties, durability, Applications, etc.
9-10	50. Marking and making window frame and window shutters, use of protection bars. 51. Exercises on roof trusses – Lay out marking roof trusses in reduced scale (Model types)- king post ,queen post etc.	Types of window frame and window shutters. Protection bars: types and uses. Roof trusses: King post, queen post etc. related terms, sizes construction etc.
11-12	52. Exercises on simple floor construction and joints used therein. Exercises on partition construction. 53. Repairing practice: 54. Repair and reconditioning of :- a) Hand tools and equipments. b) 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.
13.	Revision	
	Internal Assessment/Examination 03days	

NOTE: -

- *More emphasis to be given on video/real-life pictures during theoretical classes. Some real-life pictures/videos of related industry operations may be shown to the trainees to give a feel of Industry and their future assignment.*

9.1 WORKSHOP CALCULATION SCIENCE & ENGINEERING DRAWING

Block – I		
S No.	Workshop Calculation and Science (Duration: - 20 hrs.)	Engineering Drawing (Duration: - 30 hrs.)
1.	Properties of Material : properties - Physical & Mechanical, Types –Ferrous & Non-Ferrous, difference between Ferrous and Non-Ferrous metals, introduction of Iron, Cast Iron, Wrought Iron, Steel, difference between Iron and Steel, Alloy steel, carbon steel, stainless steel, Non-Ferrous Alloys.	Drawing Instruments : their uses Drawing board, T-Square, Drafter (Drafting M/c), Set Squares, Protractor, Drawing of lines and their application (Hidden, centre, construction, Extension, Dimension, Section) Methods of Division of line segment
2.	Mass, Weight and Density: Mass, Unit of Mass, Weight, difference between mass and weight, Density, unit of density, specific gravity of metals. Centre of gravity and its practical application.	Drawing of Geometrical Figures: Angle, Triangle -different types, Rectangle, Square, Rhombus, parallelogram, Circle and its elements.
3.	- Forces definition. - Definition and example of compressive, tensile, shear forces, axial and tangential forces.	Lettering and Numbering as per BIS SP46-2003: Single Stroke, Double Stroke, inclined, Upper case and Lower case
4.	Mensuration: parallelogram lengths of diagonals of square & rectangles. Pythagoras Theorem, Area and perimeter of square, rectangle, parallelogram, triangle, circle, and semi circle. Area of trapezoid,	Dimensioning: - types and methods of dimensioning (functional, non-functional and auxiliary) - Types of arrowhead - Leader Line with text
5.	Volume of solids – cube, cuboids, cylinder and Sphere. Surface area of solids – cube, cuboids, cylinder and Sphere.	Method of presentation of Engineering Drawing - Pictorial View - Orthogonal View - Isometric view
6.	- Area of cut-out regular surfaces: circle and segment and sector of circle.	Symbolic Representation (as per BIS SP:46-2003) of : - Fastener (Rivets, Bolts and Nuts) - Bars and profile sections - Weld brazed and soldered joints.

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		<ul style="list-style-type: none"> - Electrical and electronics element - Piping joints and fittings
7.	<ul style="list-style-type: none"> - Volume of simple solid blocks - Volume of cut-out solids: hollow cylinders, frustum of cone, block section. 	Construction of Geometrical Drawing Figures: <ul style="list-style-type: none"> - Polygons and their values of included angles. - Conic Sections (Ellipse)
8.	<p>Work, Power and Energy: work, unit of work, power, unit of power, Horse power, energy, use of energy, potential and kinetic energy, examples of potential energy and kinetic energy.</p>	Drawing of Solid figures (Cube, Cuboids, Cone and Frustum of Cone) with dimensions.
9.	<p>Friction – Limiting friction – measuring of friction – examples. Simple problems on straight and bell crank levers. Laws of friction, co-efficient of friction and angle of friction. Problems on inclined plane.</p>	Free Hand sketch of hand tools and measuring tools used in the trade.

Block – II		
Sl. No.	Workshop Calculation and Science (Duration: - 20 hrs.)	Engineering Drawing (Duration: - 30 hrs.)
1.	stress, strain and modulus of elasticity, ultimate, strength, factor of safety and different types of stresses	Drawing of riveted joints, different types of threads, bolts, nuts, locking devices, keys, cotters, couplings, bearings, pulleys cotters screw joint, knuckle joint etc. Making drawings of lap and butt and single or double strap riveted joints.
2.	Elementary principle of triangle of forces and parallelogram of forces. Resolution and composition of forces. Application to lifting tackles like chain pulley block, crane, wall crane, etc. problems. Moment of a force-couples-simple problems. Example in simply supported and loaded beams- General conditions of equilibrium for a series of forces acting on a body. Stable, non stable and neutral equilibrium of bodies-simple explanation.	- Construction of simple curves of interpretation-simple exercises. - Development of surfaces of prism, cylinders, pyramids and cones
3.	Heat and temperature, their units, difference between heat and temperature, boiling point, melting point, scale of temperature, relation between different scale of temperature, Thermometer, pyrometer, Expansion of solids, liquids and gases due to heat, coefficient of expansion. Brief description of transference of heat-conduction, convection and radiation.	- Reading of advanced blue prints including structural drawings and other allied items such as materials, list.
4.	Electricity and its various effects. Electric current-positive and negative terminals, use of switches and fuses. Types of current- AC, DC, Units of current, resistance and voltage; Simple electric circuit-Ohm's law-simple calculation. Conductor, insulator, Types of connections – series, parallel, electric power, Horse power, energy, unit of electrical energy. Concept of earthing.	- Drawings of fabricated channels or I section Girders. - Drawings of fabricated channels simple roof trusses, purlins, braced columns glazing or window frames and welded girders.
5.	Trigonometry: Trigonometric ratios, Trigonometric tables. - Finding the value of unknown sides and angles of a triangle by Trigonometrical method. - Finding height and distance by trigonometry. - Application of trigonometry in shop problems.	- Drawing of fabricated jobs like brackets, bed plates. -

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	(viz. taper angle calculation).	
6.	<u>Levers and Simple Machines:</u> levers and its types. Simple Machines, Effort and Load, Mechanical Advantage, Velocity Ratio, Efficiency of machine.	-



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9.2 EMPLOYABILITY SKILLS

(DURATION: - 110 HRS.)

Block – I (Duration – 55 hrs.)	
1. English Literacy Duration : 20 Hrs. Marks : 09	
Pronunciation	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)
Functional Grammar	Transformation of sentences, Voice change, Change of tense, Spellings.
Reading	Reading and understanding simple sentences about self, work and environment
Writing	Construction of simple sentences Writing simple English
Speaking / Spoken English	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
2. I.T. Literacy Duration : 20 Hrs. Marks : 09	
Basics of Computer	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
Computer Operating System	Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.
Word processing and Worksheet	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets.

Computer Networking and Internet	Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cyber crimes.
3. Communication Skills	
Duration : 15 Hrs. Marks : 07	
Introduction to Communication Skills	Communication and its importance Principles of Effective communication Types of communication - verbal, non verbal, written, email, talking on phone. Non verbal communication -characteristics, components-Para-language Body language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.
Motivational Training	Characteristics Essential to Achieving Success. The Power of Positive Attitude. Self awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview.
Behavioral Skills	Problem Solving Confidence Building Attitude
Block – II	
Duration – 55 hrs.	
4. Entrepreneurship Skills	
Duration : 15 Hrs. Marks : 06	
Concept of Entrepreneurship	Entrepreneur - Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation

	to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.
Project Preparation & Marketing analysis	Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of PLC, Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.
Institutions Support	Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes& procedure & the available scheme.
Investment Procurement	Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.
4. Productivity	
Duration : 10 Hrs. Marks : 05	
Benefits	Personal / Workman - Incentive, Production linked Bonus, Improvement in living standard.
Affecting Factors	Skills, Working Aids, Automation, Environment, Motivation - How improves or slows down.
Comparison with developed countries	Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.
Personal Finance Management	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.
6. Occupational Safety, Health and Environment Education	
Duration : 15 Hrs. Marks : 06	
Safety & Health	Introduction to Occupational Safety and Health importance of safety and health at workplace.
Occupational Hazards	Basic Hazards, Chemical Hazards, Vibroacoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.
Accident & safety	Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.
First Aid	Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person.

Basic Provisions	Idea of basic provision legislation of India. Safety, health, welfare under legislative of India.
Ecosystem	Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.
Pollution	Pollution and pollutants including liquid, gaseous, solid and hazardous waste.
Energy Conservation	Conservation of Energy, re-use and recycle.
Global warming	Global warming, climate change and Ozone layer depletion.
Ground Water	Hydrological cycle, ground and surface water, Conservation and Harvesting of water.
Environment	Right attitude towards environment, Maintenance of in -house environment.
7. Labour Welfare Legislation	
Duration : 05 Hrs. Marks : 03	
Welfare Acts	Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.
8. Quality Tools Duration : 10 Hrs.	
Marks : 05	
Quality Consciousness	Meaning of quality, Quality characteristic.
Quality Circles	Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.
Quality Management System	Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.
House Keeping	Purpose of House-keeping, Practice of good Housekeeping.
Quality Tools	Basic quality tools with a few examples.

BROAD LEARNING TO BE COVERED IN INDUSTRY FOR CARPENTER TRADE:

1. Safety and best practices /Basic Industrial Culture (5S, KAIZEN, etc.)
2. Record keeping and documentation
3. Making components observing different metal removing procedure and perform different fitting job.
4. Assembling of different components as per requirement and check functionality.
5. Carryout maintenance of different structures.

Note: Actual training will depend on the existing facilities available in the establishments.

The **competencies/ specific outcomes** on completion of On-Job Training are detailed below: -

Block – I

1. Revision of basic skills/operations done in the 1st year. Introduction in safety precautions in the shop floor. Making a template and layout of a job..
2. Using of special hand tools – use of bow saw, fret saw, key hole saw etc. use of planes, shoulder plane, plough planes, compass planes, router etc. Chisels – bearing tools, bit, expansion bit etc. use of carving hand tools.
3. Grinding and sharpening of hand tools, plane cutter chisels, cutters for rebate planes, molding planes Sharpening and setting of different types of saws.
4. Stacking and seasoning of timber.
5. Carving of simple figures.
6. Use of laminated sheet – block boards, ply-wood, sunmica sheets, ply veneer, insulation boards, High density and Medium density board etc. Veneering and its use.
7. Use of different types of wood screws, nails, coach screws etc. Preparation of wooden dowels and their uses, use of metal dowels
8. Fittings of hinges, locks, handles, fasteners, tower bolts, flush bolts, castors, hasp and staple, door rings etc.
9. Preparation of bill of material of different jobs, estimation and costing.
10. Marking out and of Tusk tenon and mortise joint. Preparation of different types of dovetail joints, common dovetail, lapped dovetail, secret dovetail, splay dovetail.
11. Use of electrical portable machine such as portable circular saw machine, planing machine, drill machine, sander machine, router machine, fret saw machine, etc.
12. Making furniture: stool, tray, tables etc. Marking and making decorative book shelve, rack and cabinet etc.

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13. Making writing table with drawer and cupboard, fitting of drawer lock, hinges, cupboard lock etc.
14. Making chairs/armless. Varnishing and polishing.

Block – II

15. Preparation of door frame and door shutters
16. Making window frame and window shutters
17. Construction of floor
18. Layout and making of partition.
19. Construction of stair cases.
20. Making ceiling. Fixing hard board or any insulation board, use different moldings to cover joint.
21. Construction of louvers. Construction of sky and lantern roof light..
22. Making roof truss and construction. Construction of shuttering (from work).
23. Timbering of trench.
24. Storage and preservation of different types of timber.
25. Use of wood working machines including circular saw machine, surface planer and thickness machine/ jointer planing machine, mortising (chain and hollow chisel) tenoning machines, band saw, fret saw machine, spindle moulder m/c, wood turning lathe, universal wood working machine.
26. Sand papering and finishing surface for applying wood finishing materials.
27. Sponging the surface, filling up the nail holes and cracks etc.
28. French /Wax polishing. Laquer finishing, Painting.
29. Pattern Making, Core, and Core Print.
30. Use and care of portable power hand tools.
31. Working to simple architectural drawing. Simple fitting work, sheet metal work.

Note:

1. Industry must ensure that above mentioned competencies are achieved by the trainees during their on job training.
2. In addition to above competencies/ outcomes industry may impart additional training relevant to the specific industry.

INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE

CARPENTER			
LIST OF TOOLS AND EQUIPMENT for Basic Training (For 20 Apprentices)			
A. TRAINEES TOOL KIT (For each additional unit trainees tool kit Sl. 1-18 is required additionally)			
Sl. no.	Name of the Tool &Equipments	Specification	Quantity
1	Foot rule / steel rule	(Two ft. Four fold)	21 nos.
2	Marking knife,	200 mm. Length	21 nos.
3	Carpenter square	200 mm	21 nos.
4	Square, bevel	50 mm	21 nos.
5	Carpenter making gauge	200 mm.	21 nos.
6	Carpenter mortisegauge	200 mm	21 nos.
7	Saw hand	450 mm.	21 nos.
8	Saw tenon	300 mm.	21 nos.
9	Plane, jack metal	335 mm. X 50 mm cutter	21 nos.
10	Plane smoothing, metal cutter.	200 mm. X 50 mm	21 nos.
11	Chisel, firmer (bevel) edge	6 mm. 10mm.,15mm.,20mm. and 25 mm. width (5 nos.)	21 nos.
12	Chisel, mortise	06mm.,10mm., and15 mm. (3 nos.)	21 nos.
13	Screw driver (cabnit maker)	300 mm.	21 nos.
14	Mallet medium size	250 mm.	21 nos.
15	Claw hammer.	500 gms.	21 nos.
16	Oilstone(carborundum) universal silicon carbitecombinationrough and fine	200x 50x25 mm	21 nos.
17	Hand brush for bench cleaning		21 nos.

B : INSTRUMENTS & GENERAL SHOP OUTFIT

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19.	Measuring tape	3 meter	01nos.
20.	Contruction scale	1 meter	4 nos.
21.	Spring caliper inside	150 mm	4 nos.
22.	Spring caliper out side		4 nos.
23.	Wing compass	300 mm.	2 no.
24.	Trammel Point		2 nos.
25.	Sprit level	300 mm.	2 nos.
26.	Rip saw	600 mm.	4 nos.
27.	Cross cut saw	450 mm.	2 nos.
28.	Key hole saw	250 mm.	2 no.
29.	Fret saw frame	150 mm.	2 no.
30.	Compass saw	350 mm.	4 no.
31.	Adze	15 kg.	4 nos.
32.	Trying plane metal	450 mm. X 60 mm. Cutter	2 nos.
33.	Plane rivet adjustable	250 mm. X meters x 9 mm. Cutters.	4 nos.
34.	Plough plane with set of 8	cutter up to 12 mm. Width	4 nos.
35.	Spoke shaves	50 mm. Cutter	8 nos.
36.	Plane adjustable circular	250 mm	4 no.
37.	Router plane		4 no.
38.	Cabinet scraper	100 mm.	4 no.
39.	Gauge chisel, scribing	6mm.,10mm.,12mm.,16mm., 20mm.	8 nos.
40.	Ball pein hammer	600 gm.	4 nos.
41.	Cross pein hammer	600 gms.	4 nos.
42.	Screw driver	450 mm.	4 nos.
43.	Screw driver	250 mm.	4 nos.
44.	Screw driver	150 mm.	4 nos.
45.	Pincer	50 mm.	4 nos.
46.	File half round 2nd cut	250 mm.	8 nos.
47.	File half round wood rasp bastad mm.		8 set
48.	File slim taper	100 mm	12 nos.
49.	File slim taper	150 mm.	12 nos.
50.	Card file (steel) wire brush for file		4 nos.
51.	Hands drill	6 mm. Capacities	8 nos.
52.	Country drill with bow (ball bearing type)		4 nos.
53.	Ratchel brace	250 mm. Swap	4 nos.

Carpenter

54.	Hand auger	10mm.,12mm.,14mm.,16mm.,18mm.,20mm.,22mm.,25 mm	2 sets
55.	Centre bits	6mm.,8 mm.,10mm.,12mm..	2 sets
56.	Expansion bit sets		2 sets
57.	Twist drill bits	6mm.,8mm.10mm.,12, mm	2 sets
58.	Counter sink bit rose type	12 mm.	4 nos.
59.	Breast drill	6 mm.capacity	2 nos.
60.	Centre punch 5		4 nos.
61.	Plunger saw set / pistol grip type.		2 nos.
62.	Number punch	12 mm.	2 nos.
63.	Slip stone	100 mm.	8 nos.
64.	Round crow bar with chisel and claw end	1070 x 25 mm.	2 nos.
65.	'G' clamp	100 mm	8 nos.
66.	'G' clamp	150 mm.	8 nos.
67.	'G' clamp	250 mm.	4 nos.
68.	'T' bar cramp	0.6 meter	8 nos.
69.	'T' bar cramp	1.25 meter	4nos.
70.	'T' bar cramp	1.75 meter	4 nos.
71.	Carpenter vice	250 mm jaws	16 nos.
72.	Saw sharpening vice	250 jaws. / 350mm with wooden jaws	2 nos.
73.	Carving tools set.		4 set
74.	Goggles pair		2 no.
75.	Glass cutter		2 nos.
76.	Nail punch		4 nos.
77.	Surface plate	600 x 600 mm.	1nos.
78.	Carpenter's work bench	2400x920x800 mm. Height	8nos
79.	Oil can		4 nos.
80.	Drills chuck	12 mmcapacities	1 nos.
81.	Moisture meter		1nos.
82.	Greese gun		1nos.
83.	Spanner double ended	set of 14	1 nos.
84.	Electrical drying oven (small type).		1 no.
85.	Bench working	240 x 120 x 90 cm.	4 nos.
86.	Almirah	180 x 90 x 45 cm.	2 nos.
87.	Instructor Table		1+1 no.
88.	Instructor Chair		1 +1no.

Carpenter

89.	Black board with easel.		1 no.
90.	Fire extinguisher	(For 4 Units)	2 nos.
91.	Fire buckets.		2 nos.
92.	Wing compass	25.4 cm or 30 cm.	2 nos.
93.	Class room Chair		20 nos.
94.	Class Room table		20nos
95.	Computer Chair		4+1
96.	Computer Table		4+1
97.	Desktop computer/Lap top with related MS office software		4+1
98.	Discussion Table	8' x 4' x 2½	2
99.	First- aid box		As required
100	Instructional Material – Ref. books		As required
101	Internet connection with all accessories		As required
102	Laser printer		1
103	LCD projector/ LED /LCD TV (42")		1
C : GENERAL MACHINERY INSTALLATIONS			
1	Portable circular saw machine		02 nos.
2	Portable planing machine		02 nos.
3	Power drill machine		02 nos.
4	Portable sander machine		01 no.
5	Portable jig saw machine		02 nos.
6	Portable router machine		01 no.
7	Power screw driver		02 nos.
8	Combind surfacer and thickner / jointer planing machine		01 no.
9	'Lathe, wood turning.'	150 mm height of centres 1.75-meter bed, Motorised complete with a set of turning tools.	03 nos.
10	Tenoning machine (single ended)		01 no.
11	Mortising machine (combine hollow chisel and chain)		01 no.
12	Bench Grinder	200 mm.wheel dia. pedestal	01 no.
13	Drill machine (Pedestal)	12 mm. Capacity	01 no.
14	Portable electric drill	6 mm. Capacity (woif type)	01 no.

Carpenter

15	Portable discsander	200 mm. Dia	01 no.
16	Adjustable saw sharpener		01 no.
17	Electric heater	1000/1500 w 1 nos.102. Electric blower (portable)	01 no.
18	Universal wood working machine /Circular saw machine		01 no.
19	Band saw machine		01 no.
20	Automatic band saw sharpening machine		01 no.
21	Band saw brazing or shouldering machine		01 no.



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Carpenter

INFRASTRUCTURE FOR WORKSHOP CALCULATION & SCIENCE AND ENGINEERING DRAWING

TRADE: CARPENTER

LIST OF TOOLS& EQUIPMENTS FOR -20APPRENTICES

1) Space Norms : 45 Sq. m.(For Engineering Drawing)

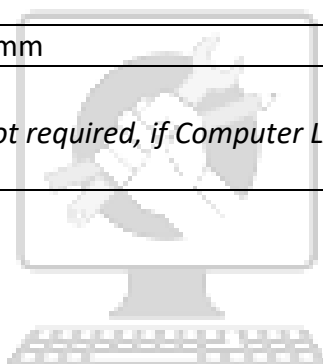
2) Infrastructure:

A : TRAINEES TOOL KIT:-			
Sl. No.	Name of the items	Specification	Quantity
1.	Draughtsman drawing instrument box		20+1 set
2.	Set square celluloid 45° (250 X 1.5 mm)		20+1 set
3.	Set square celluloid 30°-60° (250 X 1.5 mm)		20+1 set
4.	Mini drafter		20+1 set
5.	Drawing board (700mm x500 mm) IS: 1444		20+1 set
B : Furniture Required			
Sl. No.	Name of the items	Specification	Quantity
1	Drawing Board		20
2	Models : Solid & cut section		as required
3	Drawing Table for trainees		as required
4	Stool for trainees		as required
5	Cupboard (big)		01
6	White Board	(size: 8ft. x 4ft.)	01
7	Trainer's Table		01
8	Trainer's Chair		01

Carpenter

TOOLS & EQUIPMENTS FOR EMPLOYABILITY SKILLS		
Sl. No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations and Internet connection with standard operating system and standard word processor and worksheet software	10 Nos.
2.	UPS - 500VA	10 Nos.
3.	Scanner cum Printer	1 No.
4.	Computer Tables	10 Nos.
5.	Computer Chairs	20 Nos.
6.	LCD Projector	1 No.
7.	White Board 1200mm x 900mm	1 No.

Note: - Above Tools & Equipments not required, if Computer LAB is available in the institute.



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FORMAT FOR INTERNAL ASSESSMENT

Name & Address of the Assessor :						Year of Enrollment :								
Name & Address of ITI (Govt./Pvt.) :						Date of Assessment :								
Name & Address of the Industry :						Assessment location: Industry / ITI								
Trade Name :			Semester:			Duration of the Trade/course:								
Learning Outcome:														
Sl. No	Maximum Marks (Total 100 Marks)		15	5	10	5	10	10	5	10	15	15	Total internal assessment Marks	Result (Y/N)
	Candidate Name	Father's/Mother's Name	Safety consciousness	Workplace hygiene	Attendance/ Punctuality	Ability to follow Manuals/ Written instructions	Application of Knowledge	Skills to handle tools & equipment	Economical use of materials	Speed in doing work	Quality in workmanship	VIVA		
1														
2														