SYLLABUS OF SEMESTER SYSTEM
FOR THE TRADE OF

WELDER (PIPE)

SEMESTER-I & II

Under

Craftsmen Training Scheme (CTS)
(One year / Two Semesters)

Redesigned in
2014

By
Government of India
Ministry of Labour & Employment (DGE&T)

GENERAL INFORMATION

1. Name of the Trade : **WELDER (PIPE)**

2. N.C.O. Code No. : **7212.10, 7212.20, 7212.40 & 7212.50**

3. Duration of Craftsmen Training : 12 months (2 Semesters)

4. Power norms : 16 KW

5. Space norms : Workshop: 80 Square meters. (5 Sq.m/trainee)

6. Entry Qualification : Pass 8th Class Examination.

7. Unit size (No. of student) : 16

8. Instructor's /Trainer's qualification Trade theory & trade practical

(A) : Essential (any one of the below)

(i) NTC/NAC with Three years Experience in relevant field with Craft Instructors Training

Certificate.

(ii) Diploma in Mechanical and allied with two years experience in relevant field.

(iii) Degree in Mechanical / Metallurgy / Production Engineering/Mechatronics with one Year experience in relevant field.

(B) Desirable qualification: for (ii) & (iii) Craft Instructors Training Certificate.

Note:

(i) Out of two Instructors required for the unit of 1+1, one must have Degree/Diploma and other must have NTC/NAC qualifications.

(ii) Instructor qualification for W/shop Calculation, Engg Drawing & Employability Skill would be as per the training manual.

COURSE INFORMATION

Introduction

- This course is meant for the candidates who aspire to become a professional welder specializing in all position welding on pipe & tubes. To meet the demand for fuel and power, exploration, refining and transportation of the medium in gas and liquid form plays an important role. In these industries expertise in all position welding is very much essential.
- This course is renamed & restructured as WELDER(PIPE) from the existing COE Fabrication sector as follows.
    - First year BBBT - Basic welding (2months) module is converted in to CTS first semester WELDER (PIPE) course.
    - Second year advanced module PRESSURE VESSEL & PIPE WELDING is converted in to CTS Second semester WELDER (PIPE) course.

Terminal Competencies/Deliverables:

After successful completion of this course the trainee shall be able to perform the following skills with proper sequence.

1. Welding of M.S. Sheet and M.S. Pipe by GAS welding process.
2. Welding of M.S. Plate in all position by SMAW process.
3. Straight, Bevel & Circular cutting on MS. Plate by Oxy-Acetylene cutting process.
4. Repair & Maintenance works
5. Gouging, Gas and Plasma cutting on M.S plates
6. Groove welding on M.S. plate in 1G,2G, 3G & 4G positions
7. Prepare and weld pipes in1G,2G, 5G & 6G positions by SMAW & GTAW
8. Prepare and fit pipes for T, Y, K joints and weld by SMAW
9. Welding of pipe by GMAW
10. Inspect and test welds by using Non-destructive Testing method - PT

Employment opportunities:

On successful completion of this course, the candidates shall be gain fully employed in the following sectors of industries:

1. Tubular Structure Fabrication like Roof and Building construction.
2. Site construction activities for power stations, process industries and mining.
3. Service industries like road transportation and Railways.
4. Ship building and repair
5. In public sector industries like HAL, BHEL,BEML, NTPC, etc. and private industries in India and abroad.
6. Petrochemical industries like ONGC,IOCL,HPCL etc
7. Offshore oil exploration, processing and cross country pipe lines
8. Self employment

Further learning pathways:

- On successful completion of the course trainees can opt for additional NCVT certificates in the following courses by doing the second semester since the first semester is common for all welder courses.

  WELDER,
  WELDER (GTAW &GMAW),
  WELDER (STRUCTURAL),
  WELDER (FABRICATION&FITTING),
  WELDER (WELDING & INSPECTION)
- Also on successful completion of the course they can pursue Apprenticeship training in the reputed Industries / Organisations.

SYLLABUS FOR TRADE PRACTICAL AND TRADE THEORY

SEMESTER-I

Week No	Trade Practical		Trade Theory
1	F-01 F-02	- Induction training: - Familiarisation with the Institute. - Importance of trade Training - Machinery used in the trade. - Introduction to safety equipment and their use etc. - Hack sawing, filing square to dimensions. - Marking out on MS plate and punching .	- General discipline in the Institute - Elementary First Aid. - Importance of Welding in Industry - Safety precautions in Shielded Metal Arc Welding, and Oxy-Acetylene Welding and Cutting.
2		- Setting up of Arc welding machine & accessories and Striking an arc - Setting of oxy-acetylene welding equipment, Lighting and setting of flame.	- Introduction and definition of welding. - Arc and Gas Welding Equipments, tools and accessories . - Various Welding Processes and its applications . - Arc and Gas Welding terms and definitions.
3	OAW-01 OAW-02 OAGC-01	- Fusion run without and with filler rod on M.S. sheet 2 mm thick in flat position. - Edge joint on MS sheet 2 mm thick in flat position with out filler rod. - Marking and straight line cutting of MS plate. 10 mm thick by gas.	- Different process of metal joining methods: Bolting, riveting, soldering, brazing, seaming etc. - Types of welding joints and its applications. Edge preparation and fit up for different thickness. - Surface Cleaning
4	SMAW-01 SMAW-02	- Straight line beads on M.S. plate 10 mm thick in flat position. - Weaved bead on M. S plate 10mm thick in flat position.	- Basic electricity applicable to arc welding and related electrical terms & definitions. - Heat and temperature and its terms related to welding - Principle of arc welding. And characteristics of arc .
5	OAW-03 SMAW-03	- Square butt joint on M.S. sheet 2 mm thick in flat Position . - Fillet "T" joint on M.S. Plate 10 mm thick in flat position.	- Common gases used for welding & cutting, flame temperatures and uses. - Chemistry of oxy-acetylene flame. - Types of oxy-acetylene flames and uses. - Oxy-Acetylene Cutting Equipment principle, parameters and application.
6	OAGC-02 OAW-04 SMAW-04	- Beveling of MS plates 10 mm thick. By gas cutting. - Open corner joint on MS sheet 2 mm thick in flat Position - Fillet lap joint on M.S. plate 10 mm thick in flat position.	- Arc welding power sources: Transformer, Motor Generator set, Rectifier and Inverter type welding machines and its care & maintenance.. - Advantages and disadvantages of A.C. and D.C. welding machines
7	OAGC-03 OAW-05 SMAW-05	- Circular gas cutting on MS plate 10 mm thick by profile cutting machine. Fillet "T" joint on MS sheet 2 mm thick in flat position - Open Corner joint on MS plate 10 mm thick in flat position.	- Welding positions as per EN &ASME : flat, horizontal, vertical and over head position. - Weld slope and rotation. - Welding symbols as per BIS & AWS.

8	OAW-06 SMAW-06	- Fillet Lap joint on MS sheet 2 mm thick in flat position. - Single "V" Butt joint on MS plate 12 mm thick in flat position (1G) .	- Arc length – types – effects of arc length. - Polarity: Types and applications.
9	OAW-07 SMAW-07 SMAW-08	- Square Butt joint on M.S. sheet. 2 mm thick in Horizontal position . - Straight line beads and multi layer practice on M.S. Plate 10 mm thick in Horizontal position. - Fillet " T" joint on M.S. plate 10 mm thick in Horizontal position.	- Calcium carbide properties and uses. - Acetylene gas properties and generating methods. - Acetylene gas Purifier, Hydraulic back pressure valve and Flash back arrestor
10	OAW-08 SMAW-09	- Fillet Lap joint on M.S. sheet 2 mm thick in horizontal position . - Fillet Lap joint on M.S. plate 10 mm thick in horizontal position .	- Oxygen gas and its properties - Production of oxygen by Air liquefaction . - Charging process of oxygen and acetylene gases - Oxygen and Dissolved Acetylene gas cylinders and Color coding for different gas cylinders. - Gas regulators, types and uses.
11	OAW-09 OAW-10 SMAW-10	- Fusion run with filler rod in vertical position on 2mm thick M.S sheet - Square Butt joint on M.S. sheet. 2 mm thick in vertical position - Single Vee Butt joint on M.S. plate 12 mm thick in horizontal position (2G). -	- Oxy acetylene gas welding Systems (Low pressure and High pressure). Difference between gas welding blow pipe(LP & HP) and gas cutting blow pipe - Gas welding techniques. Rightward and Leftward techniques.
12	SMAW- 11 OAW-11 SMAW-12	- Weaved bead on M.S Plate 10mm in vertical position. - Fillet "T" joint on M.S sheet 2 mm thick in vertical position . -Fillet "T" joint on M.S. plate 10 mm thick in vertical position.	- Arc blow – causes and methods of controlling. - Distortion in arc & gas welding and methods employed to minimize distortion - Arc Welding defects, causes and Remedies.
13	OAW-12 SMAW-13	- Structural pipe welding butt joint on MS pipe Ø 50 and 3mm WT in 1G position. - Fillet Lap joint on M.S. Plate 10 mm in vertical position.	- Specification of pipes, various types of pipe joints, pipe welding positions, and procedure. - Difference between pipe welding and plate welding.
14	SMAW-14 OAW-13	- Open Corner joint on MS plate 10 mm thick in vertical position. -Pipe welding - Elbow joint on MS pipe Ø 50 and 3mm WT.	- Pipe development for Elbow joint, "T" joint, Y joint and branch joint - Manifold system
15	OAW-14 SMAW-15	- Pipe welding "T" joint on MS pipe Ø 50 and 3mm WT. - Single "V" Butt joint on MS plate12 mm thick in vertical position (3G) .	- Gas welding filler rods, specifications and sizes. - Gas welding fluxes – types and functions. - Gas Brazing & Soldering : principles, types fluxes & uses - Gas welding defects, causes and remedies.
16	OAW-15	- Pipe welding 45 ° angle joint on MS pipe Ø 50 and 3mm WT.	- Electrode : types, functions of flux, coating factor, sizes of electrode Coding of electrode as per BIS, AWS,

	SMAW-16	- Straight line beads on M.S. plate 10mm thick in over head position.	- Effects of moisture pick up. - Storage and baking of electrodes. - Special purpose electrodes and their applications.
17	SMAW-17 SMAW-18	- Pipe Flange joint on M.S plate with MS pipe Ø 50 mm X 3mm WT - Fillet "T" joint on M.S. plate 10 mm thick in over head position.	- Weldability of metals, importance of pre heating, post heating and maintenance of inter pass temperature.
18	SMAW-19 SMAW-20	- Pipe welding butt joint on MS pipe Ø 50 and 5 mm WT. in 1G position. - Fillet Lap joint on M.S. plate 10 mm thick in over head position.	- Classification of steel. - Welding of low, medium and high carbon steel and alloy steels.
19	SMAW-21 SMAW-22	- Single "V" Butt joint on MS plate 10mm thick in over head position(4G) - Pipe butt joint on M. S. pipe Ø 50mm WT 6mm (1G Rolled).	- Effects of alloying elements on steel - Stainless steel : types- weld decay and weldability.
20	OAW-16 SMAW -23 OAW-17	- Square Butt joint on S.S. sheet. 2 mm thick in flat position. - Square Butt joint on S.S. Sheet 2 mm thick in flat position. - Square Butt joint on Brass sheet 2 mm thick in flat position.	- Brass – types – properties and welding methods. - Copper – types – properties and welding methods.
21	OAW-18 SMAW-24 AG-01	- Square Butt & Lap joint on M.S. sheet 2 mm thick by brazing. - Single "V" butt joint C.I. plate 6mm thick in flat position. - Arc gouging on MS plate 10 mm thick.	- Aluminium and its alloys, properties and weldability, Welding methods - Arc cutting & gouging,
22	OAW-19 OAW-20	- Square Butt joint on Aluminium sheet. 3 mm thick in flat position . - Bronze welding of cast iron (Single "V" butt joint) 6mm thick plate	- Cast iron and its properties types. - Welding methods of cast iron.
23	**Industrial Training / Project Work**		
24	**Industrial Training / Project Work**		
25	**Revision**		
26	**Examination**		

Abbreviations:

SMAW - Shielded Metal Arc Welding
OAW - Oxy-Acetylene gas Welding
OAGC - Oxy-Acetylene Gas Cutting
F - Fitting
WT - Wall Thickness**.**

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SYLLABUS FOR TRADE PRACTICAL AND TRADE THEORY
SEMESTER-II

Week No	Trade Practical		Trade Theory
1		- Familiarisation with the machinery used in the trade - Cutting practice on M.S. plates using gas cutting methods - Cutting practice of M.S. plates using plasma cutting methods - Gouging practice	- Outline of the subjects to be covered - Importance of pressure vessels and pipe welding - Gas cutting & plasma cutting - Safety in welding
2		- Edge preparation for plate groove welding - Fit up of joints by tack welding using simple fixtures - Pipe and plate flange joint welding T & Y pipe joint welding	- Principles of Shielded Metal Arc Welding (SMAW) - Types of power source - Polarity type and arc length - Welding positions and importance
3	SMAW -01	- Groove welding on plate in 1G & 2G positions - Inspection and clearance using LPI testing during Root pass and cover pass	- Edge preparation and tack welding procedure - Welding fixtures and clamps
4	SMAW -02	- Groove welding on plate in 3G positions - Inspection and clearance using LPI testing during Root pass and cover pass	- Electrodes - types - description and specification - BIS, AWS, etc. - Functions of flux and characteristic of flux
5	SMAW -03	- Groove welding on plate in 3G positions - Inspection and clearance using LPI testing during Root pass and cover pass	- Selection of electrodes (Rutile / Cellulosic / Low hydrogen etc.) & coating factors - Electrode storage and backing temperature
6	SMAW -04	- Groove welding on plate in 4G positions - Inspection and clearance using LPI testing during Root pass and cover pass	- Types of metals and their characteristics - Classification of steels
7	SMAW -05	- Groove welding on plate in 4G positions - Inspection and clearance using LPI testing during Root pass and cover pass	- Introduction to pipe welding - Types of pipes and pipe schedule - Preparation work before welding
8	SMAW -06	- Preparation of pipe joint for pipe welding (schedule 40) - Prepare the edges , Clean the joint surfaces, Fit up the pipes and tack weld the pipes - Fit up inspection	- Basic pipe welding procedure - uphill welding, down hill welding and horizontal welding
9	SMAW -07	- Welding of pipes (schedule 40) in 1G position - Inspection and clearance using LPI testing during Root pass and cover pass	- Pipe welding position 1G, 2G, 5G & 6G
10	SMAW -08	- Welding of pipes(schedule 40) in 2G position - Inspection and clearance using LPI testing during Root pass and cover pass	- Selection of electrode (SMAW) for root pass and cover pass welding - Procedure for welding heavy wall pipes in 5G position welding.
11	SMAW -9	- Root welding of pipes(schedule 40) in 5G position - Intermediate and cover pass welding in 5G points	- Procedure for welding heavy wall pipes in 6G position welding - Welding symbols

		- Inspection and clearance using LPI testing	
12	SMAW -10	- Root welding of pipes (schedule 40) in 5G position - Intermediate and cover pass welding in 5G points - Inspection and clearance using LPI testing	- Procedure for welding of thin wall pipes in downhill position - Procedure for welding pipes in 2G position
13	GTAW -01 GTAW -02 GTAW -03	- Beading practice by TIG on MS sheets - Square butt joint on M.S. sheet in flat position - Square butt joint on M.S. plate in flat position - Inspection and clearance using LPI testing	- Welding procedure for complicated pipe joint, T-joints with intersection - Top, Bottom and Side - Y joint etc.
14	GTAW -04 GTAW -05	- Square butt joint on M.S. plate in 2G position - Inspection and clearance using LPI testing - Square butt joint on M.S. plate in 3G position - Inspection and clearance using LPI testing	- Introduction to GTAW welding - Advantages, Equipment - Electrode -
15	GTAW -06	- Square butt joint on M.S. plate in 4G position - Inspection and clearance using LPI testing	- Shielding Gas and Advantage of root pass welding by GTAW
16	GTAW -07 GTAW -08	- Root pass welding of pipes(schedule 40) 1G positions by TIG - Inspection and clearance using LPI testing - Root pass welding of pipes (schedule 40) 2G positions by TIG - Inspection and clearance using LPI testing	- Importance of preheating, post heating and post weld heat treatment - Welding metallurgy - weld stress - Distortion and control. - Correction of distorted section
17	GTAW -09 GTAW -10 GTAW -11	- Root pass welding of pipes (schedule 60) 5G positions by TIG - Inspection and clearance using LPI testing - Root pass welding of pipes (schedule 60) 6G positions by TIG - Inspection and clearance using LPI testing - Pipe welding dia 50mm in 2G position by GTAW	- Introduction to GMAW & Flux cored arc welding –Equipment, accessories, Advantages and Limitations
18	GTAW -12 SMAW -10	- Root pass welding of pipes (schedule 60) 6G positions by TIG - Inspection and clearance using LPI testing - Cover pass Intermediate pass by SMAW - Inspection and clearance using LPI testing	- Power source - Wire feeder - Electrode wires - shielding gases - Types of metal transfer and welding parameters
19	SMAW -11 SMAW -12	- Root pass welding of pipes (schedule 80) 6G positions by SMAW (by pipe welding electrode) - Inspection and clearance using LPI testing - Cover pass Intermediate pass by SMAW (by low hydrogen electrode) - Inspection and clearance using LP testing	- Types of welding defects, cause and remedy - Non-destructive testing methods
20	GMAW-01 GMAW-02 GMAW-03	- Beading practice by GMAW on MS plates - Square butt joint on M.S. sheet in flat position - Single V joint on M.S. plate in flat position - Inspection and clearance using LP testing	- Requirement for qualification in different codes - Qualification procedure under various codes - Different tests and inspection involved in qualification
21	GMAW-04 GMAW-05	- Pipe (schedule 40) welding by GMAW in 1G position . - Pipe (schedule 60) welding by GMAW in 1G position .	- Inspection and testing of weldments - Visual inspection kits and Gauges

22		- Dimensional inspection of weldments - Visual inspection of weldments - Non-destructive testing of weldments - Bend Testing of specimen according to codes and standards	- Pressure welding codes and standards (IBR, ASME etc.) - Writing procedure for WPS and PQR - Grouping of metals and filler rods (P & F number)
23	**Industrial training / Project work**		
24	**Industrial training / Project work**		
25	**Revision**		
26	**Examination**		

Abbreviations:

SMAW - Shielded Metal Arc welding
GTAW - Gas Tungsten Arc Welding
GMAW - Gas Metal Arc Welding
Schedule 40 Pipe = Min. Dia 100mm & Wall thickness 4mm to 6mm
Schedule 60 Pipe = Min. Dia 100mm & Wall thickness 6mm to 8mm
Schedule 80 Pipe = Min. Dia 150mm & Wall thickness 10mm to 13mm

LIST OF TOOLS & EQUIPMNT
FOR SEMISTER I &II

Tools & Equipments for a batch 16Trainees + one

Consumable kit

SI. No.	Name of the items	Quantity
1	Leather Hand Gloves 14”	17 pairs .
2	Cotton hand Gloves 8”	17 pairs
3	Leather Apron leather	17 nos.
4	S.S Wire brush 5 rows and 3 rows	17 nos.each
5	Leather hand sleeves 16”	17 pairs
6	Safety boots for welders	17 pairs
7	Leg guards leather	17 pairs
8	Rubber hose clips 1/2"	20 nos
9	Rubber hose oxygen 8 mm dia X 10 Mts long as per BIS	2 nos
10	Rubber hose acetylene 8 mm dia X 10 Mts long as per BIS	2 nos
11	Arc welding cables multi cored copper 400/ 600 amp as per BIS	45 mts each
12	Arc welding single coloured glasses 108 mm x 82 mm x 3 mm. DIN 11A &12 A	34 nos.
13	Arc welding plain glass 108 mm x 82 mm x 3 mm.	68 nos
14	Gas welding Goggles with Colour glass 3 or 4A DIN	34 nos
15	Safety goggles plain	34 nos
16	Spark lighter	6 nos
17	AG 4 Grinding wheels	10 nos

Trainees Tools Kit

SI. No.	Name of the items	Quantity
1	Welding helmet fiber	17 nos.
2	Welding hand shield fiber	17 nos.
3	Chipping hammer with metal handle 250 Grams	17 nos.
4	Chisel cold flat 19 mm x 150 mm	17 nos.
5	Centre punch 9 mm x 127 mm	17 nos.
6	Dividers 200 mm	17 nos.
7	Stainless steel rule 300mm	17 nos.
8	Scriber 150 mm double point	17 nos.
9	Flat Tongs 350mm long	17 nos.
10	Hack saw frame fixed 300 mm	17 nos.
11	File half round bastard 300 mm	17 nos.
12	File flat 350 mm bastard	17 nos.
13	Hammer ball pane 1 kg with handle	17 nos.
14	Tip Cleaner	17 nos.
15	Try square 6”	17 nos

General Machinery Shop outfit

SI. No.	Name and Description of Tools	Quantity
16	Spindle key	4
17	Screw Driver 300mm blade and 250 mm blade	1 each
18	Number punch 6 mm	2 set
19	Letter punch 6 mm	2 set
20	Magnifying glass 100 mm . dia	2 nos
21	Universal Weld measuring gauge	2 nos
22	Earth clamp 600A	6 nos
23	Spanner D.E. 6 mm to 32mm	2 sets
24	C-Clamps 10 cm and 15 cm	2 each
25	Hammer sledge double faced 4 kg	1
26	S.S tape 5 meters flexible in case	1
27	Electrode holder 600 amps	6
28	H.P. Welding torch with 5 nozzles	2 sets
29	Oxygen Gas Pressure regulator double stage	2
30	Acetylene Gas Pressure regulator double stage	2
31	CO_2 Gas pressure regulator, with flow meter	1 set
32	Argon Gas pressure regulator with flow meter	2 set
33	Metal rack 182 cm x 152 cm x 45 cm	1
34	First Aid box	1
35	Steel lockers with 8 Pigeon holes	2
36	Steel almirah / cupboard	2
37	Black board and easel with stand	1
38	Flash back arrester (torch mounted)	4 pairs
39	Flash back arrester (cylinder mounted)	4 pairs
40	Auto Darkening Welding Helmet	2 nos.

General Installation

41	Welding Transformer with all accessories (400A , OCV 60 – 100 V, 60% duty cycle)	2 sets
42	Welding Transformer or Inverter based welding machine with all accessories (300A , OCV 60 – 100 V, 60% duty cycle)	2 sets
43	D.C Arc welding rectifiers set with all accessories (400 A. OCV 60 – 100 V, 60% duty cycle)	2 sets
44	GMAW welding machine 400A capacity with air cooled torch, Regulator, Gas preheater, Gas hose and Standard accessories	1 set
45	AC/DC GTAW welding machine with water cooled torch 300 A, Argon regulator, Gas hose, water circulating system and standard accessories.	2 set
46	Air Plasma cutting equipment with all accessories, capacity to cut 25 mm clear cut	01 set
47	Air compressor suitable for air plasma cutting system	01 no
48	Pipe beveling machine	01 no
49	Universal Testing machine	Optional
50	Pug cutting machine Capable of cutting Straight & Circular with all accessories	01 set
51	Pedestal grinder fitted with coarse and medium grain size grinding wheels dia. 300 mm	1

52	Bench grinder fitted with fine grain size silicon carbide green grinding wheel dia. 150 mm	1
53	AG 4 Grinder	2 Nos
54	Suitable gas welding table with fire bricks	2 Nos
55	Suitable Arc welding table with positioner	9
56	Trolley for cylinder (H.P. Unit)	2
57	Hand shearing machine capacity to cut 6 mm sheets and flats	1
58	Power saw machine 18''	1
59	Portable drilling machine (Cap. 6 mm)	1
60	Oven, electrode drying 0 to 350°C, 10 kg capacity	1
61	Work bench 340x120x75 cm with 4 bench vices of 150 mm jaw opening	4 sets
62	Oxy Acetylene Gas cutting blow pipe	2 sets
63	Oxygen, Acetylene Cylinders	2 each*
64	CO_2 cylinder	1 No *
65	Argon gas cylinder	1 No *
66	Anvil 12 sq. inches working area with stand	1 No.
67	Swage block	1 No.
68	Die penetrant testing kit	1 set
69	Magnetic particle testing Kit	1 set
70	Fire extinguishers (foam type and CO_2 type)	1
71	Fire buckets with stand	4 nos
72	Portable abrasive cut-off machine	1 No
73	Centre lathe swing over dia 10"	Optional
74	Suitable gas cutting table	1 No
75	Welding Simulators for SMAW/GTAW/GMAW	1 each (Optional)

NOTE:

1. * Optionally Gas cylinders can also be hired as and when required
2. No additional items are required to be provided for unit or batch working in the Second shift except the items under trainee's tool kit and steel lockers.

Class Room Furniture for Trade Theory

Sl. No	Names & Description of Furniture	Quantity
1	Instructor's table and Chair (Steel)	1 set
2	Students chairs with writing pads	16
3	White board size 1200mm X 900 mm	1
4	Instructors lap top with latest configuration pre loaded with O.S and MS Office package.	1
5	LCD projector with screen.	1
6	Welding Process, Inspection & codes DVD/ CDs	1 set each (optional)

LIST OF TRADE COMMITTEE MEMBERS

Sl. No	Names & Designation	Organisation	Remarks
Members of Sector Mentor council			
1	Dr.G.Buvanashekaran	AGM, WRI, Trichy - Chairman	Chairman
2	Dr.K.Ashokkumar	AGM, BHEL, Trichy	Member
3	Prof. Jyothi Mukhopadhya	IIT, Ahmedabad	Member
4	B.Pattabhiraman	MD, GB Engineering, Trichy	Member
5	Dr.Rajeev kumar	IIT, Mandi	Member
6	Dr. Vishalchauhan	IIT, Mandi	Member
7	Shri D.K.Singh	ITI, Kanpur	Member
8	Shri. Navneet Arora	IIT, Roorkee	Member
9	Shri. R. K. Sharma	Head, SDC, JBM Group, Faridabad	Member
10	Shri. Puneet Sinha	Deputy Director, MSME, New Delhi	Member
Mentor			
1	Shri. Deepankar Mallick	Director of Training, DGE&T Hq,	Mentor
Members of Core Group			
1	Shri. M Thamizharasan	JDT, CSTARI, Kolkata	Member
2	Shri. M Kumaravel	DDT, FTI , Bangalore	Team Leader
3	Shri. SushilKumar	DDT, DGE&T Hq,	Member
4	Shri. S.P.Khataokar	T.O. ATI, Mumbai	Member
5	Shri. V.L. Ponmozhi	TO, CTI, Chennai	Member
6	Shri. D.Pani	TO, ATI, Howrah	Member
7	Shri. Amar Singh	TO, ATI, Ludhiyana	Member
8	Shri. Gopalakrishnan	TO, NIMI, Chennai	Member
9	Shri. Manjunatha B.S	JTO, GITI, K.G.F. Karnataka	Member
10	Shri. Venugopal PC	ITI Chalakudi, Kerala	Member