



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

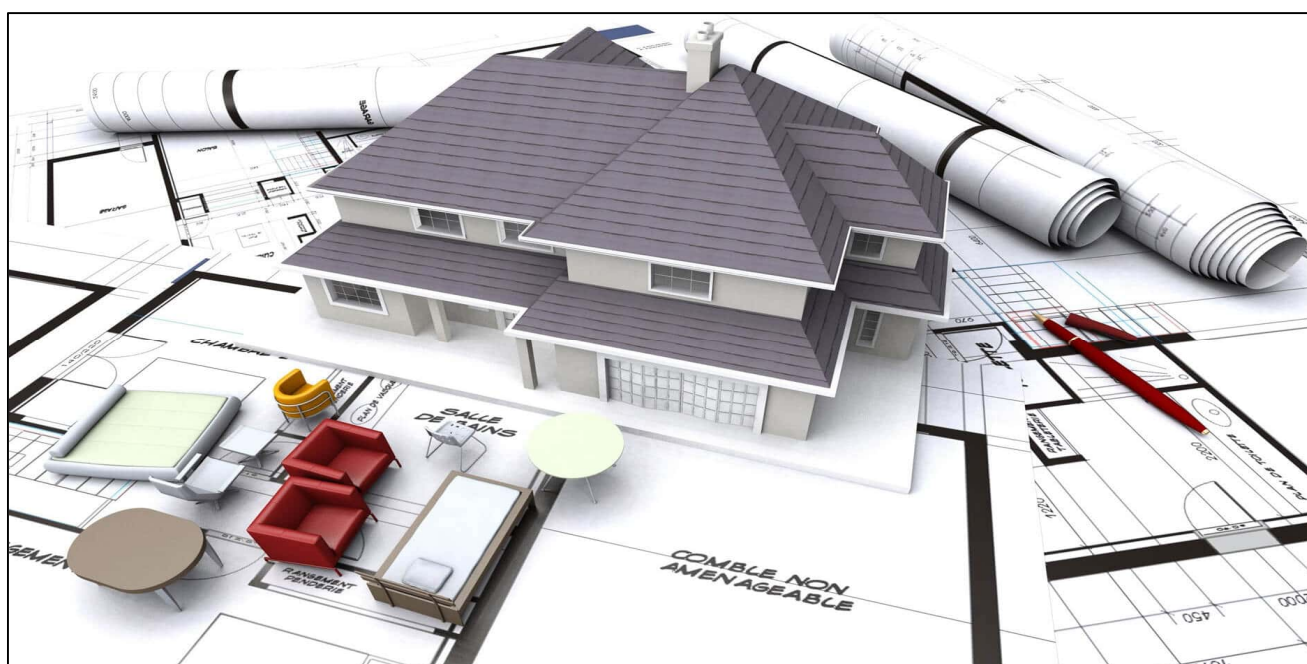
COMPETENCY BASED CURRICULUM

ARCHITECTURAL DRAUGHTSMAN

(Duration: Two Years)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL - 5



SECTOR – CONSTRUCTION



Directorate General of Training

ARCHITECTURAL DRAUGHTSMAN

(Engineering Trade)

(Revised in 2019)

Version: 1.2

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL - 5

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

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1. COURSE INFORMATION

During the two years duration a candidate is trained on subjects viz. Professional Skill, Professional Knowledge, Workshop Science & Calculation and Employability Skills related to job role. In addition to this a candidate is entrusted to make/do project work and Extra Curricular Activities to build up confidence. The practical skills are imparted in simple to complex manner & simultaneously theory subject is taught in the same fashion to apply cognitive knowledge while executing task. The practical part starts with Architectural symbols, simple geometrical drawing and finally ends with designing Doors, Windows, Stairs, designing of Residential / office building in CAD, 3D in sketch-up software, Working drawing, Rendering in Photoshop, Preparation of 3D model and BOQ using BIM software like Revit, etc. The broad components covered under Professional Skill subject are as below:

FIRST YEAR: The first year starts with Importance of trade training and professional prospects, Importance of safety and general precautions. The practical training starts with Free hand sketching, Lettering, basic drawing (consisting geometrical figure, Architectural symbols & representations). Later the drawing skills imparted on drawing of projections, drawing of stone and brick masonry, foundation, Carpentry Joints, Doors, Windows, Lintels, Arches. Trainees are introduced with CAD and then they are entrusted to practice drawings with CAD. Drawing of Damp proof Course (DPC), Projection of Solids in inclined positions, Section of solids, Residential building Design, Stairs, Floors and flooring, Surface Development, Final site plan with landscape are being taught in the practical. From this year trainees make drawings in CAD. Apart from practical components the trainees are being taught of History of architecture - Egyptian architecture, Greek architecture, Roman architecture and Indian architecture and related theory to practical in theory class.

SECOND YEAR: Design of single/ double storied Residential building /Post office/ farm house, project in 3D sketch up, drawing of Special doors & windows, Roof and roof coverings, final design of plans rendered with furniture layout, Final site plan with landscape elements rendered, working drawing showing all dimensions of rooms and column grids with door window schedule and details, all four elevations with floor heights, lintel heights, sill heights and details, Section through staircase or toilet with complete details in the practical and related theory to practical in theory class are being taught in this year. Project like small scale residential apartment/primary school/small office design, Joints in structure using CAD, Preparation of 3D model and BOQ using BIM software like Revit, etc. , Rendering in Photoshop, Compilation and final submission of Project work in the practical and related theory to practical, Climatic responsive design, Energy conservation, Green Architecture / sustainable architecture in theory class being taught in this year.

Professional Knowledge subject is simultaneously taught in the same fashion to apply cognitive knowledge while executing task.

2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of the economy/ labour market. The vocational training programs are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer programs of DGT for propagating vocational training.

Architectural Draughtsman trade under CTS is one of the popular courses is delivered nationwide through network of ITIs, NVTIs and RVTIs. The course is of two years duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while Core area (Workshop Calculation & science and Employability Skills) impart requisite core skill, knowledge and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Broadly candidates need to demonstrate that they are able to:

- Read & interpret technical parameters/documentation, plan and organize work processes, identify necessary materials and tools;
- Perform work with due consideration to safety rules, Govt. Bye laws and environmental protection stipulations;
- Apply professional knowledge, core skills & employability skills while performing the work.
- Produce sketches as per requirements of clients.
- Document the technical parameters related to the work undertaken.

2.2 PROGRESSION PATHWAYS

- Can join industry as Technician and will progress further as Senior Technician, Supervisor and can rise to the level of Manager.
- Can become Entrepreneur in the related field.
- Can appear in 10+2 examination through National Institute of Open Schooling (NIOS) for acquiring higher secondary certificate and can go further for General/ Technical education.
- Can take admission in diploma course in notified branches of Engineering by lateral entry.
- Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC).

- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.
- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

2.3 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of two years: -

S No.	Course Element	Notional Training Hours	
		1 st Year	2 nd Year
1	Professional Skill (Trade Practical)	1120	1120
2	Professional Knowledge (Trade Theory)	240	320
3	Workshop Calculation & Science	80	80
4	Employability Skills	160	80
	Total	1600	1600

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

a) The **Continuous Assessment** (Internal) during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The final assessment will be in the form of summative assessment method. The All India Trade Test for awarding NTC will be conducted by **Controller of examinations**, DGT as per the guidelines. The pattern and marking structure are being notified by DGT from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The examiner during final examination will also check** the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one-year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%. There will be no Grace marks.

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 the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the 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 and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining 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 should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices	<ul style="list-style-type: none"> • Demonstration of good skill in the use of hand tools, machine tools and workshop equipment. • 60-70% accuracy achieved while undertaking different work with those demanded by the component/job. • A fairly good level of neatness and consistency in the finish. • Occasional support in completing the project/job.

(b) Weightage in the range of 75%-90% to be allotted during assessment	
<p>For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices</p>	<ul style="list-style-type: none"> • Good skill levels in the use of hand tools, machine tools and workshop equipment. • 70-80% accuracy achieved while undertaking different work with those demanded by the component/job. • A good level of neatness and consistency in the finish. • Little support in completing the project/job.
(c) Weightage in the range of more than 90% to be allotted during assessment	
<p>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.</p>	<ul style="list-style-type: none"> • High skill levels in the use of hand tools, machine tools and workshop equipment. • Above 80% accuracy achieved while undertaking different work with those demanded by the component/job. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

3. JOB ROLE

Architectural Draughtsman; Prepares drawings of buildings, parks, gardens, monuments etc. from sketches, designs or data for construction. Studies notes, sketches and other engineering data of buildings, parks, gardens, monuments, etc. to be constructed. Draws sketches of required construction according to directions of Architect to suit purpose and environment; alters them if directed and get them approved by him. Draws to scale drawings according to approved sketches showing plan, elevations, settings, arrangements etc. as necessary. May trace drawing and make blueprints. May prepare architectural designs, may prepare estimate schedules for material and labour. May prepare perspectives designs and render them in colour or monochrome. May prepare model of constructions work. May work as Draughtsman Civil.

Reference NCO Code-2015: 3118.0100 - Architectural Draughtsman

4. GENERAL INFORMATION

Name of the Trade	ARCHITECTURAL DRAUGHTSMAN
Trade Code	DGT/1071
NCO - 2015	3118.0100
NSQF Level	Level-5
Duration of Craftsmen Training	2 Years (3200 Hours)
Entry Qualification	Passed 10 th Class examination under 10+2 system of Education with science and mathematics.
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD, CP, LC, DW, AA, LV, DEAF, AUTISM, SLD, MD
Unit Strength	24 (There is no separate provision of supernumerary seats)
Space Norms	80 sq. m
Power Norms	6 KW
Instructors Qualification for	
1. Architectural Draughtsman Trade	<p>B.Voc/Degree in Architecture from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma in Architecture from AICTE/ recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/NAC passed in the trade of "Architectural Draughtsman" with three years' experience in the relevant field.</p> <p><u>Essential Qualification:</u> Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.</p> <p><i>NOTE:- Out of two Instructors required for the unit of 2(1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications. However, both of them must possess NCIC in any of its variants.</i></p>

2. Workshop Calculation & Science	<p>B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma in Engineering from AICTE/ recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC in any one of the engineering trades with three years' experience.</p> <p><u>Essential Qualification:</u></p> <p>National Craft Instructor Certificate (NCIC) in relevant trade</p> <p style="text-align: center;">OR</p> <p>NCIC in RoDA or any of its variants under DGT</p>				
3. Employability Skill	<p>MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability Skills from DGT institutes.</p> <p>(Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above)</p> <p style="text-align: center;">OR</p> <p>Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills from DGT institutes.</p>				
4. Minimum Age for Instructor	21 Years				
Tools and Equipment	As per Annexure-I				
Distribution of training on Hourly basis: (Indicative only)					
Year	Total Hrs. /week	Trade Practical	Trade Theory	Workshop Cal. & Sc.	Employability Skills
1 st	40 Hours	28 Hours	6 Hours	2 Hours	4 Hours
2 nd	40 Hours	28 Hours	8 Hours	2 Hours	2 Hours

Note:

Institutes having centralized computer Lab may utilize the same infrastructure for computer related training. However, for institutes where such facility is not available a separate computer Lab is required.

5. LEARNING OUTCOME

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

5.1 LEARNING OUTCOMES (TRADE SPECIFIC)

FIRST YEAR

1. Draw different types of architectural symbols following safety precautions.
2. Draw different types free hand sketches.
3. Draw different type of letterings.
4. Draw different types of plane geometry.
5. Draw orthographic projections.
6. Draw different sizes of Bricks and Brick Masonry.
7. Draw different types of Stone Masonry.
8. Draw different types of Foundation.
9. Draw different Carpentry Joints.
10. Draw different types of Wooden Doors and Windows.
11. Draw different types of Lintels.
12. Draw different types of Arches.
13. Draft in CAD.
14. Draw details of Damp proof Course (DPC) and Water Proofing Treatment at different locations.
15. Draw plan, elevation and side view of Solids in inclined positions and Section of Solids.
16. Illustrate design procedure of Residential Building.
17. Draw plan, elevation and section through toilet of the residential building and the site plan with landscape.
18. Draw typical vertical section of an external wall of two storied load bearing structure and RCC framed structure.
19. Draw Plan, elevation and Construction Details of different types of stairs.
20. Draw different types of flooring details.
21. Produce final project work applying advance CAD commands and File management.
22. Surface Development of geometrical solids.

SECOND YEAR

23. Illustrate Design-Concept and visualization of design. Topic: Residential (single/double storied), Post office, Farmhouse.
24. Draw sanction drawing with local authority bye laws.

25. Preliminary drawing of the Design project in AUTOCAD.
26. Read and Interpret structural drawing.
27. Draw 3 D model by sketch up software along with rendering, walkthrough, animated view.
28. Draw details of different types of doors.
29. Draw details of different types of windows.
30. Draw details of roofs and roof covering.
31. Prepare final design drawings in AUTOCAD.
32. Draw working drawing set to the site to execution.
33. Draw the Anthropometrics & ergonomics of commercial building.
34. Draw Standard sizes of outdoor movements like swimming pool, basketball court, badminton court, play area etc.
35. Prepare design and the site plan with landscape of Residential Apartment/primary school in AUTOCAD.
36. Draw joints in structures (viz. Details of construction joints at various positions, Details of expansion joints in walls, roof).
37. Prepare 3D model and BOQ using BIM software (REVIT ARCHITECTURE).
38. Perform rendering in Photoshop (Convert the drawings in pdf and then render it in Photoshop with necessary details).
39. Prepare Working drawing – viz. Kitchen layout, Electrical layout, Plumbing Layout, DWV details.

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
FIRST YEAR	
1. Draw different types of architectural symbols following safety precautions.	Set and fix drawing paper on the drawing board
	(a) prepare Layout of drawing sheet,
	(b) prepare a Title block,
	(c) mark and fold on the designated drawing Sheet
	Draw architectural symbols for materials, doors and windows
	Draw architectural symbols for trees, plants, shrubs.
	Draw architectural symbols for plumbing fittings
	Draw architectural symbols for electrical fittings and fixtures
2. Draw different types free hand sketches.	Sketch any types of trees, plants and shrubs
	Sketch any one structure of monument.
	Draw any landscape drawing with pencil rendering.
	Sketch any objects like cube, cone, sphere, cylinder, prism, pyramid
	Perform any one structure of different composition of patterns
3. Draw different type of letterings.	Read and interpret different types of lettering commonly used in drawings.
	Draw Gothic Lettering in Freehand.
	(a) Sketch Roman Lettering in Freehand. (b) Draw Architectural Lettering in Freehand.
4. Draw different types of plane geometry	Draw a line parallel to any given point
	Perform different methods to divide a line into any equal parts
	Draw different methods of bisecting an angle, line or arc.
	Draw geometrical constructions using different methods for triangle, rectangle, square, circle, pentagon, hexagon, heptagon, octagon, ellipse.
5. Draw orthographic projection	Draw projections of lines in simple positions
	Draw projections of lamina in simple positions
	Draw projections of solids like cube, pyramid, prism, cone, cylinder in first angle position
	Draw projections of solids like cube, pyramid, prism, cone, cylinder in third angle position
6. Draw different sizes	Draw isometric view of traditional brick showing frog.

of Bricks and Brick Masonry.	Drew different types of bats and closers in isometric view
	Perform drawing of English bond for one brick thick and one and half brick thick with plan, elevation and isometric view (a) Perform drawing of Flemish bond for one brick thick and one and half brick thick with plan, elevation and isometric view
	Prepare drawing for different types of bonds like zig zag bond, diagonal bond, stretcher bond, header bond, monk wall bond, herring bone bond, Dutch bond, garden all bond
7. Draw different types of Stone Masonry.	Draw coursed and uncoursed rubble masonry.
	Draw random Rubble Masonry.
	Draw different types of ashlar masonry.
	Draw composite masonry with stone facing with brick, stone facing with concrete.
8. Draw different types of Foundation.	Analyze data for creating foundation drawing of specific project.
	Sketch different types of Pile Foundation.
	Draw details of Raft Foundation.
	Perform sketch of Spread Foundation.
	Sketch grillage foundation.
9. Draw different types of Carpentry Joints.	Sketch Lengthening Spliced or longitudinal Joints.
	Draw types of Bearing joint commonly used.
	Draw various types of widening or side joints.
	Draw types of Corner Joints.
	Sketch types of oblique- shouldered joints
10. Draw different types of Wooden Doors and Windows.	Interpret the purpose and utility of doors.
	Draw details of a door frame.
	Draw details of Flush Door.
	Sketch details of Battened and ledged Door.
	Draw parts of wooden paneled door.
	Determine scope of windows in building.
	Draw details of Casement windows.
	Sketch of Louvered or Venetian Window.
Draw details of ventilator	
11. Draw different types of Lintels.	Understand purpose of Lintels and Chajja.
	Draw Wooden Lintel in place.
	Draw Brick lintel in position. (a) Draw Reinforced Lintel

	Draw Stone lintel.
	Draw RCC lintel in position.
12. Draw different types of Arches.	Determine utility of Arches.
	Draw various parts of Arch with technical leveling.
	Draw a Flat Arch.
	Draw Semi-circular arch.
	Draw Segmental Arch.
	Drawing of pointed Arch.
	Draw two Centre Arch.
13. Draft in CAD.	Understanding the basic starting procedures in CAD
	Analyzing the basic CAD commands
	Draft a plan and elevation of a 3-seater sofa / 1 seater sofa
	Draft a plan of chair
	Draft elevation of door
	Drafting plan of interiors of bedroom/living room with all furniture layout
14. Draw details of Damp proof Course (DPC) and Water Proofing Treatment at different locations.	Identify sources of dampness in different locations.
	Identify effects of dampness. (i) Draw Damp Proof Treatment in Basement. (ii) Draw Damp Proof Treatment in Plinth Level / Ground Floors. (iii) Draw Damp Proof Treatment in Upper Floors. (iv) Draw Damp Proof Treatment in cavity wall.
	Discover sources of water seepage in roof.
	Identify effects of water seepage.
	Draw detail of water proofing treatment at roof using PCC.
	Draw detail of water proofing treatment at roof using bitumen.
15. Draw plan, elevation and side view of Solids in inclined positions and Section of Solids.	Draw plan, elevation and side elevation of inclined solids cube.
	Draw plan, elevation and side elevation of inclined solids pyramid.
	Draw plan, elevation and side elevation of inclined solids prism.
	Draw plan, elevation and side elevation of inclined solids cone.
	Draw plan, elevation and side elevation of inclined solids cylinder.
	Check the drawings to confirm their correctness.
	Draw sectional plan, elevation and side elevation of solids/ inclined solids cutting by a horizontal section plane.
	Draw sectional plan, elevation and side elevation of solids/ inclined solids cutting by a vertical section plane.

	Draw sectional plan, elevation and side elevation of solids/inclined solids cutting by a section plane inclined to HP
	Draw sectional plan, elevation and side elevation of solids/ inclined solids cutting by a section plane inclined to VP.
	Draw the true shape of the cutting surface.
16. Illustrate design procedure of Residential Building.	Illustrate Client's requirements.
	Analyze the physical condition of proposed site.
	Analyze the environmental condition of proposed site.
	Follow the Building Byelaws according to local administration.
	Analyze design Principles of a residential Building.
	Determine Circulation space in building.
	Identify the Entry and Exit requirements of Residential Building.
	Analyze requirement of Car Parking.
	Check the drawings to confirm their correctness.
	Calculate estimated cost.
17. Draw plan, elevation and section through toilet of the residential building and the site plan with landscape.	Analyze the requirement of no. of bedroom of the Residential Buildings.
	Analyze the requirement of area/ type of drawing and dining hall.
	Analyze the requirement of no. and area of toilet.
	Analyze the requirement of area and type of kitchen.
	Analyze the requirement of area and location of verandah.
	Draw ground Floor Plan of a single storied Residential Building.
	Draw roof Plan of the Residential Building.
	Draw front and side elevation of the Residential Building.
	Draw section through entrance, balcony, toilet, doors and windows of the Residential Building.
	Check the drawings to confirm their correctness.
18. Draw typical vertical section of an external wall of two storied load bearing structure and RCC framed structure.	Draw typical vertical section of an external wall of two storied load bearing structure.
	Draw typical vertical section of an external wall of two storied RCC framed structure.
	Check the drawings to confirm their correctness.
19. Draw Plan, elevation and Construction Details of different types of stairs.	Draw plan and section of a straight stair.
	Draw plan and section of an open well stair.
	Draw plan and section of a quarter turn stair.
	Draw plan and section of a bifurcated stair

	<p>Draw plan and section of a circular stair.</p> <p>Draw detailed part section of a stair showing its various components.</p> <p>Draw detailed part section of a wooden stair.</p> <p>Draw detailed plan and section of a dog legged RCC stair.</p> <p>Draw plan and section MS. spiral stair.</p> <p>Check the drawings to confirm their correctness.</p>
20. Draw different types of flooring details.	<p>Draw Flooring details of Ground Floor over PCC floor slab using different floor finish material.</p> <p>Draw Flooring details of Basement Floor over RCC Basement Slab using different floor finish material.</p> <p>Draw flooring details of RCC Upper Floor using different floor finish material.</p> <p>Draw flooring details of wooden suspended Floor using different floor suitable finish material.</p> <p>Draw flooring details of wooden double Floor using different floor suitable finish material.</p>
21. Produce final project work applying advance CAD commands and File management.	<p>Application of advance CAD commands e.g. layers, block, insert, group, divide, measure, design center, text gradient, dimension style, leader, layouts, model space view ports.</p> <p>Determine the location of the drawing files to be saved.</p> <p>Draft all Final Floor Plans of the Residential Building in AUTO CAD.</p> <p>Draft Front Elevation and one side elevation of building.</p> <p>Draw two numbers of Through Sections showing Staircase, Toilet, Kitchen Balcony, Habitable room and Car Parking in AUTO CAD.</p> <p>Site Plan with rendering.</p> <p>Draw Key/ Location Plan.</p> <p>Check the drawings to confirm their correctness.</p>
22. Surface Development of geometrical solids.	<p>Develop surface of different prisms and pyramids in simple position cutting by horizontal plane.</p> <p>Develop surface of different prisms and pyramids in simple position cutting by vertical plane.</p> <p>Develop surface of different prisms and pyramids in simple position cutting by plane inclined to HP.</p> <p>Develop surface of different prisms and pyramids in simple position cutting by a plane inclined to VP.</p> <p>Develop surface of different prisms and pyramids inclined to VP cutting by horizontal plane.</p> <p>Develop surface of different prisms and pyramids inclined to VP</p>

		simple position cutting by vertical plane.
SECOND YEAR		
23. Illustrate Concept and visualization of design. Residential (single/double storied) Post office, Farmhouse.	Design- and of Topic: Residential (single/double storied) Post office,	Make Bubble diagram showing the through circulated areas one way, two way.
		Elements of schematic drawing. Its standard sizes and area required around for movement
		Follow the Building Byelaws according to local administration.
		Analyze requirement of Car Parking.
		Presentation drawing show the details of furniture layout, entrance exit, north point, split levels, built-up area, carpet area, common area.
24. Draw drawing with local authority bye laws.	sanction with local authority bye laws.	Draw sanction drawing showing floor plans site plan, location plan, plumbing details, rainwater harvest, schedule of areas, schedule of openings, architects' signature, client signature, north point.
		Check the drawings to confirm their correctness.
25. Preliminary drawing of the Design project in AUTOCAD.		Draw ground Floor Plan of a single storied Residential Building.
		Draw typical floor plan with staircase
		Draw roof Plan of the Residential Building.
		Draw front and side elevation of the Residential Building.
		Draw section through entrance, balcony, toilet, doors and windows of the Residential Building.
		Draw enlarged details at roof terrace.
		Draw rendered site plan with landscape.
		Check the drawings to confirm their correctness.
26. Read and Interpret structural drawing.		Draw R.C.C roof one-way slab in plan.
		Draw one-way slab section
		Draw two-way slab, section.
		Draw single reinforced beam
		Draw double reinforced beam.
		Illustrate column foundation plan, section detail.
		Prepare stairs waist slab reinforcement details.
27. Draw 3 D model by sketch up software along with rendering, walkthrough animated view.		Draw 3D animated view with help of sketch up software
		Project submission with sky, trees presentation. (a) Import drawing from Auto CAD. (b) Tools. click drag-release (c) Extrude (push/pull), grouping, layers, arc-2 point, shapes – rectangle, move, orbit, zoom, pan

	<p>(d) Auto fold, offset, make component, copy array</p> <p>(e) Solid tools, paint bucket, follow me. mirror scale, rotate</p> <p>(f) Sand box—terrain, smooove, drape, add detail, from contour, from scratch, shadow, fog, f lip edge, explode.</p> <p>(g) Camera, walkthrough, animated view by setting time.</p> <p>(h) View, axes, text light effects—omni, spot, sphere, less light, print option, hide/unhide classifier, intersect faces.</p>
28. Draw details of different types of doors.	<p>Discover special doors as per special requirement,</p> <p>Draw details of revolving door.</p> <p>Draw details of sliding door.</p> <p>Draw details of louvered door/puja door.</p> <p>Identify the metal doors as per design.</p> <p>Draw details of rolling steel shutter.</p> <p>Draw details of aluminium swing door.</p> <p>Draw collapsible door, M.S door,</p>
29. Draw details of different types of windows.	<p>Discover special windows</p> <p>Draw bay window.</p> <p>Draw details of dormer window, sky light.</p> <p>Draw aluminium sliding windows.</p> <p>Draw UPVC windows.</p> <p>Draw CRCA sheets/pressed steel windows.</p>
30. Draw details of roofs and roof covering.	<p>Draw details of lean-to roof.</p> <p>Draw couple roof.</p> <p>Draw king post truss with details and technical terms.</p> <p>Draw queen post truss.</p> <p>Determine roof covering materials.</p> <p>Method of fixing AC/GI sheets to different types of purlins</p> <p>Method of fixing mangalore tiles .</p>
31. Prepare final design drawings in AUTOCAD.	<p>Draft all Final Floor Plans of the Residential Building in AUTO CAD.</p> <p>Draft Front Elevation and one side elevation of building.</p> <p>Draw two numbers of through Sections showing Staircase, Toilet, Kitchen Balcony, Habitable room and Car Parking in AUTO CAD.</p> <p>Check the drawings to confirm their correctness.</p>
32. Draw working drawing set to the site to execution.	<p>After friezing /finalizing scheme drawing with column position</p> <p>Centerline drawing with beam c/c dimensions.</p> <p>Draw detailed column footing with dimension.</p>

	Draw Ground Floor Plan with Door Window schedule, I split levels with dimension.
	Draw First Floor Plan with Staircase design.
	Draw elevations in 1:50 scale.
	Draw detailed section through staircase, floor heights, lintel, sill heights.
	Draw enlarged stair design along with railing, balcony railing
	Draw compound wall detail.
33. Draw the Anthropometrics & ergonomics of commercial building.	Draw the Furniture design, its standard sizes and area required around for movement and height of Office Layout
	sketch the office lay out for 50 number staff
	Draw the office cabin for Managing Director.
	Draw the reception lay out.
	Draw the working area lay out.
	Check the drawings to confirm their correctness.
34. Draw Standard sizes of outdoor movements like swimming pool, basketball court, badminton court, play area etc.	Analyze data for creating swimming pool and draw the layout of swimming pool along with safety measurements.
	Draw the basketball court / badminton court.
	Sketch the layout, the play area of primary school.
	Check the drawings to confirm their correctness.
35. Prepare design and site plan with landscape of Residential Apartment/ primary school in AUTOCAD.	Read and interpret design data after analyzing the requirement and area analysis.
	Illustrate Client's requirements. sketch the bubble diagram.
	Identify the Entry and Exit requirements of Residential Building.
	Analyze requirement of Car Parking.
	Draw stilt /basement/car parking detailed drawing along with drainage, plumbing, water purification tanks.
	Determine Circulation space and draw detailed drawing of floor plans of building.
	Check the drawings to confirm their correctness.
	Sketch the four side elevations.
	Draw section through staircase and toilet.
Draw site plan with landscape layout.	
36. Draw joints in structures (viz. Details of construction joints	Location of construction joints for different members. (a)Draw construction joint installation at slabs, columns beams and walls after the day work.

at various positions, Details of expansion joints in walls, roof).	Illustrate with neat sketches of provision of joints in the following components of reservoir. (a) Draw details at junction between wall and floor. (b) Draw details of construction joint in the floor of reservoir.
	Draw details of different types of joints in structure. (a) Isolation joint in detail (b) Contraction joint, Dummy joint. (C) Sliding joint,
	Draw plan showing location of contraction, expansion and isolation joints.
	Illustrate Expansion joints in walls and roofs, spacing of expansion joints, materials used in expansion joints brick masonry (a) Draw plan showing location of expansion joint between two building blocks. (b) section 'x-x' detail and enlarged detail at walls, roof, foundation of brick masonry walls (c) Draw plan showing expansion joint in verandah slab with blown up details
	Draw detailed layout of provision of expansion joint in framed structure at (a) Roof level (b) First floor level (c) Foundation level
	Check the drawings to confirm their correctness.
37. Prepare 3D model and BOQ using BIM software (REVIT ARCHITECTURE)	Create 3D model from 2D plan.
	Interpret the basic starting procedure like installation, Unit conversion etc.
	Explore the User Interface: Menu Bar and Toolbars, Options Bar, Type Selector, Properties Button, Design Bar, Project Browser, Status Bar, View Control Bar, Drawing Area etc.
	Place and modify walls
	Complex walls
	Draw scheme in revit architecture (Creating 3D model from 2D plane) (a) Place Door window and components with dimension and constraints. (b) Create floors and Roof & ceilings (C) Curtain walls (d) Stairs Structural elements (f) Massing and site (Splitting, merging, topo surface etc.), and

		<p>conceptual models</p> <p>(g) Family creation (Doors & Windows, staircase, furniture etc.)</p> <p>Creating and Documenting the Project: Create and name a project in which you will create the building model.</p> <p>(a) Add tags to the project and schedule doors and rooms.</p> <p>(b) Create a colour scheme of the drawings with colours fill & Color Scheme Legend</p> <p>(C) Import and Export (Auto CAD files)</p> <p>(d) Manage Views (Plan region, plan view, ceiling plan, area plan & structural plan, Callout views)</p> <p>(e) Sections</p> <p>(f) Design options</p> <p>Generate surfaces and apply material to the model: Generate 3D model from 2D plan and apply material Decals</p> <p>Create Lighting, Camera view and rendering: (a) Render drawing. (b) place Camera & Lightings (C) Solar study and Walkthrough</p> <p>Prepare bill of Quantity : (a) Calculate Quantity of materials Prepare Schedule (Bill of materials, Quantities etc.)</p>
38. Perform rendering in Photoshop (Convert the drawings in pdf and then render it in photoshop with necessary details)		<p>Convert the floor plans in pdf and then render the drawing in photoshop with necessary details.</p> <p>Identify the basic features of Photoshop: Getting Started, Interface Layout, Palettes, Toolbox, Selection Tools, Alteration Tools, Drawing and Selection Tools, Assisting Tools, Color Boxes and Modes, Basic Image Editing and Saving.</p> <p>Import PDF Floor plans and render it with colours, textures and necessary details.</p> <p>Import an architectural elevation, section drawings and render in Photoshop.</p> <p>Complete the 3D view of a building with graphical representations (Sky, Trees, Human, Automobiles etc.)</p>
39. Prepare Working drawing: Kitchen layout, Electrical layout, Plumbing Layout, DWV details		<p>Draw kitchen layout details: include plan, section and all side elevations with proper dimensions and material specification.</p> <p>Draw the electrical layout of a working drawing floor plan with the proper symbols, dimensions, and notations.</p> <p>Draw Plumbing Layout drawing, shows the system of piping for fresh water going into the building and waste going out, water supply system, drainage system, Legends, Notes. Fixture units also should</p>

	be marked along with the pipe. Pipes with different purposes will be displayed with different colors for ease of understanding. Drainage pipes should be shown with slope, manhole schedule which consist of each manhole name, Depth etc.
	Draw the plan and elevation of DWV details with the specification, location and schedules of the openings.

SYLLABUS FOR ARCHITECTURAL DRAUGHTSMAN TRADE			
FIRST YEAR			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical) With Indicative Hours	Professional Knowledge (Trade Theory)
Professional Skill 56 Hrs.; Professional Knowledge 12 Hrs.	Draw different types of architectural symbols following safety precautions.	Familiarization 1. Importance of safety and general precautions observed in the institute and in the section. (10 hrs.) 2. Importance of the trade in the development of the country's infrastructure. (06 hrs.) 3. Recreational, medical facilities and other extracurricular activities of the institute. (06 hrs.) 4. All necessary guidance to be provided to the new comers to become familiar, with the working of training institute. (06 hrs.)	Orientation Familiarization with the institute Importance of trade training Introduction to the trade and professional prospects Orientation of subjects Familiarization with engineering drawing, tools and equipment. (06 hrs.)
		Architectural symbols 5. Free hand lettering styles. (07 hrs.) 6. Architectural symbol for materials, doors, windows. (07 hrs.) 7. Architectural symbols for trees, plants, shrubs. (07 hrs.) 8. Architectural symbols for plumbing and electrical fittings and fixtures. (07 hrs.)	Architectural Symbols Architectural signs and symbols and their uses in the drawings (06 hrs.)
Professional	Draw different	Sketching	Sketching techniques

<p>Skill 28 Hrs.;</p> <p>Professional Knowledge 06 Hrs.</p>	<p>types free hand sketches.</p> <p>Draw different type of letterings.</p>	<p>9. Free hand sketching of trees, plants and shrubs. (05 hrs.)</p> <p>10. Free hand sketching of landscape and monuments. (05 hrs.)</p> <p>11. Free hand sketching of objects. (05 hrs.)</p> <p>12. Lettering – types of lettering, legibility, uniformity. (08 hrs.)</p> <p>13. Purpose and uses of lines, curves, line weight, types of lines. (05 hrs.)</p>	<p>Elements of drafting, readability, clarity, accuracy and neatness</p> <p>Pencil grades</p> <p>Method of pencil uses</p> <p>Uses of different brush strokes</p> <p>Various types of lines used for sketching (06 hrs.)</p>
<p>Professional Skill 28 Hrs.;</p> <p>Professional Knowledge 06 Hrs.</p>	<p>Draw different types of plane geometry.</p>	<p>Plane geometry</p> <p>14. Draw a line parallel to any given point. (04 hrs.)</p> <p>15. Divide a line into any number of equal parts different methods. (04 hrs.)</p> <p>16. Bisect a line, arc or angle. (04 hrs.)</p> <p>17. Geometrical constructions using different method – square, pentagon, triangle, hexagon, heptagon, octagon, ellipse. (06 hrs.)</p> <p>Dimensioning</p> <p>18. Basic system of measurement, dimensional control, location, dimensioning of different objects like lines, circle, curves and angles Scale and proportion. (10 hrs.)</p>	<p>Solids</p> <p>Definition of solids – cube, square prism, hexagonal prism, triangular prism, square prism, triangular pyramid, hexagonal pyramid, pentagonal pyramid, cylinder, sphere, cone. (06 hrs.)</p>
<p>Professional Skill 112 Hrs.;</p>	<p>Draw orthographic projections.</p>	<p>Introduction to orthographic projections</p> <p>19. Types of projections. (06 hrs.)</p>	<p>Types of projections</p> <p>Types of projections</p> <p>Projection planes</p> <p>First angle projection</p>

<p>Professional Knowledge 24 Hrs.</p>		<p>20. Projection planes. (06 hrs.) 21. First angle projection. (06 hrs.) 22. Third angle projection. (06 hrs.) 23. Method of drawing orthographic projections. (06 hrs.) Projections of lines and lamina 24. Projections of lines in simple position. (12 hrs.) 25. Projection of lamina in simple position. (12hrs.) Projection of solids in simple positions 26. Drawing plan, elevation and side elevation of simple solids like cube, pyramid, prism, cone, cylinder in first angle projection. (30 hrs.) 27. Drawing projection of solids in third angle projection in simple positions. (28 hrs.)</p>	<p>Third angle projection Isometric view Isometric view of geometrical solids (24 hrs.)</p>
<p>Professional Skill 56 Hrs.; Professional Knowledge 12 Hrs.</p>	<p>Draw different sizes of Bricks and Brick Masonry.</p>	<p>Brick masonry 28. Sizes of brick and brick bats. (10 hrs.) 29. English and Flemish bond for one brick thick and one and half brick thick wall. (18 hrs.) 30. Different types of bonds (zig zag bond, diagonal bond, stretcher bond, header bond, monk wall bond, herring bone bond, Dutch bond, garden wall bond). (28 hrs.)</p>	<p>Brick masonry Technical terms, Sizes of brick and brick tiles, Principle of brick masonry construction, English and Flemish bond for one brick thick and one and half brick thick wall, Different types of bonds and their uses in construction, Hollow brick masonry, AAC Block, Fly-ash brick (12 hrs.)</p>
<p>Professional Skill 28 Hrs.;</p>	<p>Draw different types of Stone</p>	<p>Stone masonry 31. Coursed and uncoursed</p>	<p>Stone masonry Technical terms</p>

Professional Knowledge 06 Hrs.	Masonry.	<p>rubble masonry. (06 hrs.)</p> <p>32. Random rubble masonry. (06 hrs.)</p> <p>33. Ashlar masonry. (06 hrs.)</p> <p>34. Composite masonry (stone facing with brick backing, stone facing with concrete backing, stone facing with rubble backing). (10 hrs.)</p>	<p>Principles of stone masonry</p> <p>Rubble masonry</p> <p>Ashlar masonry</p> <p>Composite masonry (06 hrs.)</p>
Professional Skill 28 Hrs.; Professional Knowledge 06 Hrs.	Draw different types of Foundation.	<p>Foundation</p> <p>35. Types of foundation – spread foundation, grillage foundation, pile foundation, raft or mat foundation. (28 hrs.)</p>	<p>Foundation</p> <p>Purpose of foundation</p> <p>Causes of failure of foundation</p> <p>Types of foundation – spread foundation, grillage foundation, pile foundation, raft or mat foundation (06 hrs.)</p>
Professional Skill 28 Hrs.; Professional Knowledge 06 Hrs.	Draw different Carpentry Joints.	<p>Carpentry Joints</p> <p>36. Lengthening spliced or longitudinal joints. (04hrs.)</p> <p>37. Bearing joints. (04 hrs.)</p> <p>38. Framing joints. (05hrs.)</p> <p>39. Angle or corner joints. (05 hrs.)</p> <p>40. Widening or side joints. (05 hrs.)</p> <p>41. Oblique-shouldered joints. (05hHrs.)</p>	<p>Carpentry Joints</p> <p>Technical terms Lengthening joints and their uses Bearing joints and their uses Framing joints and their uses Angle or corner joints and their uses Widening or side joints and their uses Oblique-shouldered joints and their uses (06 hrs.)</p>
Professional Skill 56 Hrs.; Professional Knowledge 12 Hrs.	Draw different types of Wooden Doors and Windows.	<p>Doors</p> <p>42. Details of paneled door, flush door, batten and ledged door. (28 hrs.)</p> <p>Windows</p> <p>43. Details of casement window, louvered window, ventilator. (28 hrs.)</p>	<p>Doors</p> <p>Standard Sizes of doors</p> <p>Types of doors - paneled door, flush door, batten and ledged door</p> <p>Windows</p> <p>Standard Sizes of windows</p> <p>Details of casement window, louvered window, ventilator</p> <p>Fixtures and fasteners</p> <p>Types of joints (used in</p>

			doors and windows) (12 hrs.)
Professional Skill 28 Hrs.; Professional Knowledge 06 Hrs.	Draw different types of Lintels	Lintels 44. Details of Wooden lintel, stone lintel, brick lintel, steel lintel, RCC lintel, Chajjas. (28 hrs.)	Lintels Purpose of lintel Types and uses of lintels – wooden lintel, stone lintel, brick lintel, steel lintel, RCC lintel, Chajjas (06 hrs.)
Professional Skill 28 Hrs.; Professional Knowledge 06 Hrs.	Draw different types of Arches.	Arches 45. Details of semicircular arch, flat arch, segmental arch, pointed arch, two centered arch. (28 hrs.)	Arches Technical terms Materials used for construction of arches Types of arches and their uses – flat arch, semicircular arch, segmental arch, semi elliptical arch, two centered arch, three centered arch. (06 hrs.)
Professional Skill 84 Hrs.; Professional Knowledge 18 Hrs.	Draft in CAD.	CAD 46. Introduction to CAD. (03hrs.) 47. Starting procedures of CAD – screen appearance, tool bar, menu bar, quick access tool bar, command tool bar, units, settings, dimensioning. (04 hrs.) 48. Basic CAD drafting commands - 1 – line, circle, arc, ellipse, copy, move, rotate, erase, undo, mirror, offset, fillet, polygon, trim, extend, explode. (05 hrs.) 49. Basic CAD commands 2 – rectangle, array, scale, stretch, break, join, chamfer, spline, colors, line type, line weight, properties, match properties, hatch. (05 hrs.)	Factors considered in architectural design Understanding the basic elements of design like point, line, plane, figure, form and space, light and color, texture. (18 hrs.)

		<p>50. Draft a plan and elevation of a 3-seater sofa / 1 seater sofa basic CAD commands. (15 hrs.)</p> <p>51. Draft plan of chair using Basic CAD commands. (15 hrs.)</p> <p>52. Draft door elevation using basic CAD commands. (15 hrs.)</p> <p>53. Draft interiors of bedroom/living room using basic CAD commands. (22 hrs.)</p>	
<p>Professional Skill 56 Hrs.;</p> <p>Professional Knowledge 12 Hrs.</p>	<p>Draw details of Damp proof Course (DPC) and Water Proofing Treatment at different locations.</p>	<p>Damp proof Course (DPC)</p> <p>54. Details at plinth level. (15 hrs.)</p> <p>55. Details at terrace level (Water Proofing Treatment). (14 hrs.)</p> <p>56. Details at basement level. (15 hrs.)</p> <p>57. Details of cavity wall. (12 hrs.)</p>	<p>Damp proof Course (DPC)</p> <p>Definition</p> <p>Sources of dampness</p> <p>Prevention methods of dampness – integral treatment, surface treatment, membrane damp proofing, cavity wall construction</p> <p>Materials used in DPC – mastic asphalt, hot laid bitumen, metal sheets, PCC etc. (12 hrs.)</p>
<p>Professional Skill 56 Hrs.;</p> <p>Professional Knowledge 12 Hrs.</p>	<p>Draw plan, elevation and side view of Solids in inclined positions and Section of Solids.</p>	<p>Projection of Solids in inclined positions</p> <p>58. Drawing plan, elevation and side elevation of inclined solids like cube, pyramid, prism, cone, cylinder in first angle projections. (28 hrs.)</p> <p>Section of solids</p> <p>59. Drawing projection of solids in different section plane. (28 hrs.)</p>	<p>Anti-termite treatment</p> <p>Types of Anti termite treatment</p> <p>Treatment to basement in ordinary soil</p> <p>Treatment to basement in damp soil (12 hrs.)</p>
<p>Professional Skill 56 Hrs.;</p>	<p>Illustrate design procedure of Residential</p>	<p>Introduction to design</p> <p>60. Design topic – Residential. (24 hrs.)</p>	<p>Design principles – balance, proportion, perspective, movement, rhythm,</p>

Professional Knowledge 12 Hrs.	Building.	61. Concept and visualization of design. (32hrs.) (Students should be able to understand the process of designing and the design project will go throughout the year)	harmony, unity, symmetry and contrast (12 hrs.)
Professional Skill 56 Hrs.; Professional Knowledge 12 Hrs.	Draw plan, elevation and section through toilet of the residential building and the site plan with landscape.	Preliminary drawing 62. Drawing to be prepared by trainees in AUTOCAD based on single floor residential building after analyzing the requirement and area analysis. (12 hrs.) 63. Initial sketches/preliminary drawings manually. (10 hrs.) 64. Sketches of the plan. (06 hrs.) 65. Front elevation and one side elevation. (06 hrs.) 66. Section through staircase or toilet. (16 hrs.) 67. Site plan with landscaping. (06 hrs.)	Conceptual design ideas – site analysis, site planning, requirements, space designation, proportionately defined rooms, single line diagram, floor plan analysis, functional planning. (12 hrs.)
Professional Skill 28 Hrs.; Professional Knowledge 06 Hrs.	Draw typical vertical section of an external wall of two storied load bearing structure and RCC framed structure.	68. Load bearing wall. (12 hrs.) 69. RCC framed structure. (16 hrs.)	Pre-fabricated panels RCC, GI Powder coated steel panels. (06 hrs.)
Professional Skill 84 Hrs.; Professional Knowledge 18 Hrs.	Draw Plan, elevation and Construction Details of different types of stairs.	Stairs 70. Plan and elevation of different types of stairs – straight stairs, quarter turn stairs, open well stairs, bifurcated stairs, circular stairs. (26 hrs.) 71. Construction Details of	Stairs Technical terms General dimensions and arrangements Requirements of good stairs Ashlar masonry Classification of stairs – straight flight stairs, dog legged stairs, newel

		<p>dog-legged stairs, baluster details, railing, nosing, tread and riser calculation. (26 hrs.)</p> <p>72. Details of wooden stairs. (16 hrs.)</p> <p>73. Details of MS spiral stairs. (16 hrs.)</p>	<p>stairs, open well stairs, geometrical stairs, circular stairs, bifurcated stairs, spiral stairs, stairs of different materials – wooden stairs, stone stairs, metal stairs, reinforced concrete stairs (18 hrs.)</p>
<p>Professional Skill 56 Hrs.;</p> <p>Professional Knowledge 12 Hrs.</p>	<p>Draw different types of flooring details.</p>	<p>Floors and flooring</p> <p>74. Components of ground floor. (10 hrs.)</p> <p>75. Details of cement flooring. (10 hrs.)</p> <p>76. Details of stone / tile flooring. (12hrs.)</p> <p>77. Details of wooden suspended flooring. (12 hrs.)</p> <p>78. Details of wooden double floor. (12 hrs.)</p>	<p>Floors and flooring</p> <p>Components of floor – sub floor, floor covering, construction of ground floor, selection of floorings Suspended floors Floor coverings Ground and basement floor (12 hrs.)</p>
<p>Professional Skill 84 Hrs.;</p> <p>Professional Knowledge 18 Hrs.</p>	<p>Produce final project work applying advance CAD commands and File management.</p>	<p><u>CAD</u></p> <p>79. Advance CAD commands – layers, block, insert, group, divide, measure, design center, text gradient, dimension style, leader, layouts, model space view ports, File management. (20 hrs.)</p> <p><u>Final design</u></p> <p>80. Final floor plans showing living room, kitchen, bedrooms, toilet, logical order from the main entrance, basic area with furniture, garage and driveway, pedestrian ways, levels, north line, section line, scale, dwv schedule, statement of area etc. (30 hrs.)</p> <p>81. Front elevation with all</p>	<p>History of architecture (HOA)</p> <p>Egyptian architecture Characteristic features of Egyptian architecture Tombs mastaba pyramid – the great pyramid at cheops at giza the great sphinx of chephren</p> <p>Greek architecture Greek columns like doric order, ionic order, corianthan order Characteristic features of the temple of Parthenon at Athens, Olympia stadium at athens (18 hrs.)</p>

		<p>heights and levels mentioned. (17 hrs.)</p> <p>82. One side elevation with all heights and levels mentioned(17 Hrs.)</p> <p>Note: design elements to keep in consideration while designing the elevations</p>	
<p>Professional Skill 84 Hrs.;</p> <p>Professional Knowledge 18 Hrs.</p>	<p>Surface Development of geometrical solids.</p>	<p>Surface Development</p> <p>83. Developing surface Development of solids. (28 hrs.)</p>	<p>Roman architecture</p> <p>Characteristic features of the temples of Saturn at rome, the pantheon at Athens, basilica of Trajan at rome. (06 hrs.)</p>
		<p>84. Detailed section through staircase / toilet with all heights and levels mentioned. (All presentation drawing to be submitted as project spiral binding). (38 hrs.)</p>	<p>Indian architecture</p> <p>Stupas and its characteristic features and typical examples Typical Buddhist column or order Northern Indian style elements and characteristic features (lingaraja temple at Orissa, sun temple at konark, temple of khajuraho) (06 hrs.)</p>
		<p>85. Final site plan with landscape elements. (18 hrs.)</p> <p>(Note: subject of drawing, scale, date, job no, address, ph.no, north – south direction, sheet no. to be mentioned in all the sheets. Drawing produced should be well readable and self-explanatory.)</p>	<p>Central hindu style elements and characteristic features (rock cut temples at badami and Humpi, hoysaleswar temple at halebid) South hindu or Dravidian style elements and characteristic features (shore temple at mahabalipuram, brihadesvar temple at tanjavur, temple of Madurai) (06 hrs.)</p>
<p>Project work / site visit</p> <ul style="list-style-type: none"> • Project work on a single floor residence with furniture layout – plan, elevation and section (single line diagram to be made available) • Site visit to any of the construction site / study tour to historical monuments to observe the details 			

SYLLABUS FOR ARCHITECTURAL DRAUGHTSMAN TRADE			
SECOND YEAR			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical) With Indicative Hours	Professional Knowledge (Trade Theory)
Professional Skill 56 Hrs.; Professional Knowledge 16 Hrs.	Illustrate Design-Concept and visualization of design. Topic: Residential (single/double storied), Post office, Farmhouse.	Introduction to design 86. Design topic Residential (single/ double storied)/Post office/ farm house. (36 hrs.) 87. Concept and visualization of design. (20 hrs.) (Students should be able to understand the process of designing and the design project will go throughout the year.)	Factors considered in architectural design Approaches to planning Open planning Closed planning (16 hrs.)
Professional Skill 56 Hrs.; Professional Knowledge 16 Hrs.	Draw sanction drawing with local authority bye laws.	Case study 88. Case study of similar project to be done. A complete project report also to be submitted. (56 hrs.)	Factors considered in architectural design Circulation – horizontal circulation, through circulation, vertical circulation, open court circulation. (16 hrs.)
Professional Skill 56 Hrs.; Professional Knowledge 16 Hrs.	Preliminary drawing of the Design project in AUTOCAD.	Preliminary drawing 89. Drawing to be prepared by trainees in AUTOCAD based on design project after analyzing the requirement and area analysis. (08 hrs.) 90. Initial sketches/preliminary drawings manually. (10 hrs.) 91. Sketches of the plan. (06 hrs.) 92. Front elevation and one	Environmental factors considered in architectural design Orientation of building Effects of wind Window positioning Space designation Proportionately defined rooms. (16 hrs.)

		<p>side elevation. (07 hrs.)</p> <p>93. Section through staircase or toilet. (15 hrs.)</p> <p>94. Site plan with landscaping. (10 hrs.)</p>	
<p>Professional Skill 28 Hrs.;</p> <p>Professional Knowledge 08 Hrs.</p>	<p>Read and Interpret structural drawing.</p>	<p>95. RCC slab details (13 hrs.)</p> <p>96. Column foundation (15 hrs.)</p>	<p>Reading and interpretation of structural drawing.</p> <p>One way slab, two way slab.</p> <p>Single reinforced beam.</p> <p>Double reinforced beam.</p> <p>Column foundation.</p> <p>Stair case Waist slab. (08 hrs.)</p>
<p>Professional Skill 84 Hrs.;</p> <p>Professional Knowledge 24 Hrs.</p>	<p>Draw 3 D model by sketch up software along with rendering, walkthrough, animated view.</p>	<p>Introduction to 3D in sketch-up software</p> <p>97. Setup, new document, open, save and close (10 hrs.)</p> <p>98. Styles colors and materials (20 hrs.)</p> <p>99. Layers (20 hrs.)</p> <p>100. Practice or project in sketch up (34 hrs.)</p>	<p>-do- (24 hrs.)</p>
<p>Professional Skill 56 Hrs.;</p> <p>Professional Knowledge 16 Hrs.</p>	<p>Draw details of different types of doors.</p>	<p>Special doors</p> <p>101. Details of revolving doors. (12 hrs.)</p> <p>102. Details of sliding doors. (14 hrs.)</p> <p>103. Details of metal doors. (12 hrs.)</p> <p>104. Details of rolling steel shutter doors or rolling grill doors. (18 hrs.)</p>	<p>Special doors</p> <p>Louvered doors, collapsible doors, rolling steel shutter door, revolving door, sliding door, metal doors (16 hrs.)</p>
<p>Professional Skill 56 Hrs.;</p> <p>Professional Knowledge 16 Hrs.</p>	<p>Draw details of different types of windows.</p>	<p>Special windows</p> <p>105. Details of sliding windows. (10hrs.)</p> <p>106. Details of metal windows. (12 hrs.)</p> <p>107. Details of bay windows. (12 hrs.)</p> <p>108. Details of UPVC</p>	<p>Special windows</p> <p>Bay windows, dormer windows, sliding windows, metal windows (16 hrs.)</p>

		windows. (10 hrs.) 109. CRCA sheets / Pressed steel windows. (12 hrs.)	
Professional Skill 56 Hrs.; Professional Knowledge 16 Hrs.	Draw details of roofs and roof covering.	Roof and roof coverings 110. Details of lean-to roof. (10 hrs.) 111. Details of couple or span roof. (10 hrs.) 112. Details of king post truss. (10 hrs.) 113. Details of queen post truss. (10 hrs.) 114. Methods of laying and fixing AC sheets to different types of purlins. (16 hrs.)	Roof and roof coverings Technical terms Classification of pitched roof – lean to roof, couple roof, closed couple roof, collar roof, scissor roof, king post truss, queen post truss (16 hrs.)
Professional Skill 56 Hrs.; Professional Knowledge 16 Hrs.	Prepare final design drawings in AUTOCAD.	Final design 115. All floor plans rendered with furniture layout. (12 hrs.) 116. Front elevation and one side elevation rendered. (12 hrs.) 117. Section through stairs/toilet rendered (12 hrs.) 118. Final site plan with landscape elements rendered. (20 hrs.) (Note: subject of drawing, scale, date, job no, address, ph.no, north, sheet no. to be mentioned in all the sheets. Drawing produced should be well readable and self-explanatory)	Roof covering materials – wooden shingles, asbestos cement sheets, galvanized corrugated iron sheets, asphaltic roofing sheets (16 hrs.)
Professional Skill 56 Hrs.; Professional Knowledge 16 Hrs.	Draw working drawing set to the site to execution.	Working drawing 119. All floor plans working drawing showing all dimensions of rooms and column grids with door window schedule and	-do- (16 hrs.)

		<p>details if any. (24 hrs.)</p> <p>120. All four elevations with floor heights, lintel heights, sill heights and details if any. (16 hrs.)</p> <p>121. Section through staircase or toilet with complete details. (16 hrs.)</p>	
<p>Professional Skill 56 Hrs.;</p> <p>Professional Knowledge 16 Hrs.</p>	<p>Draw the Anthropometrics & ergonomics of commercial building.</p> <p>Draw Standard sizes of outdoor movements like swimming pool, basketball court, badminton court, play area etc.</p>	<p>Case study</p> <p>122. Case study of project like small scale residential apartment/primary school/small office design for 50 people to be done. (12 hrs.)</p> <p>Anthropometrics of commercial building</p> <p>123. Furniture design, its standard sizes and area required around for movement and height (office layout, reception layout, cabin layout, swimming) (24 hrs.)</p> <p>124. Standard sizes of outdoor movements like swimming pool, basketball court, badminton court, play area etc. (20 hrs.)</p>	<p>Case study</p> <p>A complete project report also to be submitted with all plans and photographs and details of the given project (16 hrs.)</p>
<p>Professional Skill 84 Hrs.;</p> <p>Professional Knowledge 24 Hrs.</p>	<p>Prepare design and the site plan with landscape of Residential Apartment/primary school in AUTOCAD</p>	<p>Preliminary drawing</p> <p>125. Drawing to be prepared by trainees in AUTOCAD based on design project after analyzing the requirement and area analysis. (12 hrs.)</p> <p>126. Initial sketches/preliminary drawings manually. (15 hrs.)</p>	<p>Climatic responsive design</p> <p>Study of climates in India</p> <p>Sun path diagram and orientation of building with respect to the climate.</p> <p>Positioning of windows and open spaces as per climatic need</p> <p>Fundamentals of climate responsive planning</p> <p>Passive solar design. (24 hrs.)</p>

		<p>127. Sketches of the plan. (10 hrs.)</p> <p>128. Front elevation and one side elevation. (12 hrs.)</p> <p>129. Section through staircase or toilet. (20 hrs.)</p> <p>130. Site plan with landscaping. (15 hrs.)</p>	
<p>Professional Skill 84 Hrs.;</p> <p>Professional Knowledge 24 Hrs.</p>	<p>Draw joints in structures (viz. Details of construction joints at various positions, Details of expansion joints in walls, roof)</p>	<p>Joints in structure</p> <p>131. Details of construction joints at various positions. (56 hrs.)</p> <p>132. Details of expansion joints in walls, roof. (28 hrs.)</p>	<p>Expansion joints and construction joints</p> <p>Need for expansion joints in building</p> <p>Construction joints – Contraction joints, isolation joints, dummy joints, sliding joints. position of construction joints</p> <p>Expansion joints in walls and roofs, spacing of expansion joints, materials used in expansion joints (24 hrs.)</p>
<p>Professional Skill 196 Hrs.;</p> <p>Professional Knowledge 56 Hrs.</p>	<p>Prepare 3D model and BOQ using BIM software (REVIT ARCHITECTURE)</p>	<p>133. Preparation of 3D model and BOQ using BIM software like Revit, etc. (35 hrs.)</p> <p>134. Creating 3D model from 2D plane. (35 hrs.)</p> <p>135. Generation of surfaces. (30 hrs.)</p> <p>136. Material editor. (30 hrs.)</p> <p>137. Lighting and rendering. (32 hrs.)</p> <p>138. Quantity calculation of materials. (34 hrs.)</p>	<p>-do- (56 hrs.)</p>
<p>Professional Skill 56 Hrs.;</p> <p>Professional Knowledge 16 Hrs.</p>	<p>Perform rendering in Photoshop (Convert the drawings in pdf and then render it in photoshop with necessary details)</p>	<p>Rendering in Photoshop</p> <p>139. Convert the floor plans, elevation, section and 3d views in pdf and then render the drawings in photoshop with necessary details. (56</p>	<p>Green Architecture / sustainable architecture</p> <p>Green building and its importance.</p> <p>Benefits of green building</p> <p>Fundamentals of green building</p>

		hrs.)	Material and resources Water efficiency (16 hrs.)
Professional Skill 84 Hrs.;	Prepare Working drawing:	140. Kitchen layout. (22 hrs.)	Energy conservation
Professional Knowledge 24 Hrs.	Kitchen layout, Electrical layout, Plumbing Layout DWV details	141. Electrical layout. (22 hrs.) 142. Plumbing Layout. (22 hrs.) 143. DWV details. (18 hrs.)	Sustainable site selection Green building rating system – LEED/ GRIHA (24 hrs.)
Project work / site visit			
Broad Area:			
<ul style="list-style-type: none"> a) Compiling and final submission of Project work b) Study tour to historical places to familiarize culture and heritage. 			

SYLLABUS FOR CORE SKILLS
1. Workshop Calculation & Science (Common for two year course) (80 Hrs. + 80 Hrs.)
2. Employability Skills (Common for all CTS trades) (160 Hrs. + 80 Hrs.)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in

LIST OF TOOLS & EQUIPMENT			
ARCHITECTURAL DRAUGHTSMAN (for batch of 24 candidates)			
S No.	Name of items	Specification	Quantity
A. GENERAL OUTFIT FOR CLASSROOM			
1.	Dual Desk		12 Nos.
2.	Drawing Boards measuring 1250mm x900mm fixed over adjustable stand		24+1Sets
3.	Armless chair with back (revolving type)		24 Nos.
4.	Students Lockers	with 8 compartments	3 Nos.
5.	Chest of Drawers		4 Nos.
6.	Steel bookcase (with lockable glass shutters)		1 No.
7.	Instructor's table with glass top		1 No.
8.	Chair for Classroom		1 No.
9.	Instructor's revolving with armchair		1 No.
10.	Steel Almirah		2 Nos.
11.	Magnetic White Board		2 Nos.
12.	Pin-up board (with or without stand)		6 Nos.
13.	Working table	size - 1250x950	2 Nos.
14.	Air conditioner		As required
15.	Desktop Computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	24+1Sets
16.	Plotter (A0 size)		1 no
17.	Multi-function Laser color printer A3 size		1 no
18.	5KVA or higher offline UPS		As required
19.	Computer workstation (module type)		24 nos.

20.	Bookshelf with glass shutter		1 no.
21.	LAN connectivity		As per requirement
22.	Internet connection		As per requirement
23.	Visualizer		1 no
24.	Vacuum cleaner		2 nos.
25.	LCD projector with screen / LED display with inbuilt computer with screen		1 no
26.	Interactive board		1 no
27.	Graphic Pens		As per requirement
28.	CAD software / CAD within built BIM		24+1 users

Mouse & Keyboard should be treated as Raw Material.

B. LIST OF CONSUMABLES FOR 24 TRAINEES AND ONE INSTRUCTOR

29.	Adjustable set square with beveled edge	30 cm	24 + 1 sets
30.	Compass with Long arm & pen holder		24 + 1 Nos.
31.	Protractor	15 cm	24 + 1 Nos.
32.	Triangular Scale	30 cm (feet-inch, metric)	24 + 1 Nos.
33.	Clutch pencil	0.5mm, 0.2 mm , 2mm.	24 + 1 Nos.
34.	Parallel Bar / T scale	1250 mm long	24 +1 Nos.
35.	Plastic French curve with ink edge	set of 12	3 sets
36.	Flexi curve- 80cm		4 Nos.
37.	Furniture template	1:50, 1:100,1:200	24+1 Nos.
38.	Circular and oval template		24+1 Nos.
39.	Metric Tape-5M		24+1 Nos.
40.	Calculator		05 Nos
41.	Beam Compass with pen holder		02 Nos.
42.	Pen Drive		As per requirement

Note:

- 1. The quantities of hand Tools may be increased according to the No. of Trainees on roll (including the Strength of Additional Unit, if any).*
- 2. In addition to the list, small measuring tapes, Drawing Sheet, Tracing Paper, Butter Sheet, Color Pencils, Poster colours, painting brushes, Pencils (of various grades), Pencil Leads, Cello tape, Eraser, Drafting pens, Mount boards and any other Raw Materials would be issued as*



per the requirement and will be considered as consumable items.

3. *For faculty members Raw Materials like Pen Drive, Pocket Hard Disk, Memory Card, Re-writable CDs & DVD etc., may be provided.*
4. Internet facility is desired to be provided in the classroom.

ANNEXURE-II

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts, trainers of ITIs, NSTIs, faculties from universities and all others who contributed in revising the curriculum.

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

List of Expert members participated for finalizing the course curriculum of Architectural Draughtsman trade held on 10th January' 2018 at CSTARI, Kolkata.			
S No.	Name & Designation Sh/Mr./Ms.	Organization	Remarks
1.	B.V.S. Sesa Chari, Director	CSTARI, Kolkata	Chairman
2.	Avijit Banerjee, DGM	Shapoorji Pallonji & co. Pvt. Ltd., Kolkata	Member
3.	Sutanu Bhattacharya, Director	SBA spectra Consultant Pvt. Ltd.	Member
4.	Nabarun Biswas, Architect Director	AB Consultants (P) Ltd.	Member
5.	Sikha Paul, Architect	ABODE Consultant	Member
6.	Raja Dey, Jt. Director (Arch)	HQ Chief Engineer, Ministry of Defrnce, MES, Shillong-711103	Member
7.	D. Brahmeswari, TO	RVTI, Bangalore	Member
8.	Arpana Singh, TO	NVTI, Noida	Member
9.	Polly Biswas, TO	RVTI, Indore	Member
10.	Suriya Kumari K. ,TO	RVTI, Kolkata	Member
11.	Soma Das (Talukdar), VI	RVTI, Kolkata	Member
12.	Himanish Bhattacharya, VI	RVTI, Kolkata	Member
13.	N. Nath, ADT	CSTARI, Kolkata	Member
14.	B.K. Nigam, TO	CSTARI, Kolkata	Member
15.	R.N. Manna, TO	CSTARI, Kolkata	Member

MEMBERS OF SECTOR MENTOR COUNCIL		
S No	Name and Representing organization	Remarks
1	Mr. G.M. Rao, Chairman GMR Infrastructure IBC Knowledge Park, Phase 2, "D" Block, 9th Floor, 4/1, Bannerghatta Road, Bangalore - 560 029, Karnataka	Nominated by Federation of Indian Chambers of Commerce and Industry (FICCI)
2	Mr. Jasmeet Singh, Head-Customer Experience Program JCB India, 23/7 Mathura Road Ballabgarh, Faridabad, Haryana 121004	Nominated by Federation of Indian Chambers of Commerce and Industry (FICCI)
3	Mr. C.S. Gupta, Secretary Indian Plumbing Association E - 117, L.G.F. Greater Kailash - 3 Masjid Moth, NEW DELHI – 110 048	
4	Mr. Ajit Gulabchand, Chairman HCC Chairman Construction SSC Hindustan Construction Co. Ltd. Hincon House, 247 Park LBS Marg, Vikhroli (W), Mumbai - 400083	
5	Mr. Satish Gottipati M/s Precca Solutions India Pvt. Ltd. Plot No 6, D. No. 2-9/5/6 Venkat Sai Gateway, Green Land Colony, Hyderabad- 500032	Nominated by Federation of Indian Micro and Small & Medium Enterprises (FISME)
6	Dr. Anjan Dutta, Professor Dept. of Civil Engg. Indian Institute of Technology Guwahati Guwahati 781039, Assam, India	Nominated by Indian Institute of Technology, Guwahati
7	Dr. Mahendra Singh, Professor Indian Institute of Technology Roorkee Roorkee, Uttarakhand, India - 247667	Nominated by Indian Institute of Technology, Roorkee
8	Pr. S.C. Dutta, Professor Indian Institute of Technology Bhubaneswar Bhubaneswar-751 013	Nominated by Indian Institute of Technology, Bhubaneswar
9	Dr. Rajesh Deoliya, Principal Scientist CSIR-CBRI Extension Centre Zone 6, II nd Floor India Habitat Centre, Lodhi Road, New Delhi 110003	Nominated by Central Building Research Institute (CBRI), Roorkee
10	Dr. N. Dhang, Professor D/o Civil Engineering Indian Institute of Technology Kharagpur Kharagpur, India - 721302	Chairman

11	Dr. P. Sitapati Rao, Additional Director General National Academy of Construction NAC Grounds, Cyberabad, Hyderabad-500084, Andhra Pradesh, India	Nominated by National Academy of Construction, Hyderabad
12	Dr. Koshy Varghese, Professor D/o Civil Engg, Indian Institute of Technology Madras, IIT P.O., Chennai 600 036	Nominated by Indian Institute of Technology, Madras
13	Shri M.C. Sharma, Jt. Director (TTC)	Mentor
14	Shri. R.N. MANNA, TO	Representative of CSTARI
15	Shri. GOPALKRISHNAN, TO	Representative of NIMI
16	Smt. ARPANA SINGH, TO, NVTI NOIDA	Champion Master Trainer
17	Shri. S. RANA, TO, ATI, Kolkata	Member
18	Shri. S.R. VHATKAR, TO, ATI, Kolkata	Member
19	Shri, T.K. BHATTACHARYA, TO, ATI, Hyd	Member
20	Shri. P.K. MADAVI, TO, CTI, Chennai	Member
21	Smt. Surya Kumari, TO, RVTI Kolkata	Member
22	Shri. C.T. SHANTILAL, VI, ATI, Calicut	Member
23	Shri Devasari Ganesh, TO, RVTI Mumbai	Member
24	Shri K.N. Babu, TO, RVTI, Bangalore	Member
25	Shri. D.K. Chattopadhyay, TO, ATI Kolkata	Member
26	Shri. Chockalingam, TO, CTI, Chennai	Member
27	Smt. Brahmeswari, TO, RVTI(W), Bangalore	Member
28	Shri. K V Suresh, Principal, ITD, Kerala	Member
29	Shri. Musthfa V M, Sr. Instructor, ITD, Kerala	Member
30	Shri. Madhusudhanan C, Sr. Instructor, ITD, Kerala	Member
31	Shri. Suresh S, Sr. Instructor, ITD, Kerala	Member
32	Shri. R Sundar, ATO, Govt. ITI, Chennai	Member
33	Smt. Amrutha, VI, RVTI(W), Bangalore	Member
34	Smt. Hari Chandana Devi, VI, RVTI(W), Panipat	Member
35	Ms. Aswathy Prabhakaran, VI, RVTI(W), Bangalore	Member
36	Shri. Sugesh K, Jr. Instructor, ITD, Kerala	Member

ABBREVIATIONS

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Loco motor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with disabilities

