

Syllabus for the subject

of

TRADE THEORY-I

AND

TRADE PRACTICAL-I

Under

CRAFT INSTRUCTOR TRAINING SCHEME

DRAUGHTSMAN CIVIL

Redesigned in

2014

By

Government of India

Ministry of Labour & Employment (DGE&T)

Directorate General of Employment & Training

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A. RATIONALE

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

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

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

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

B. GENERAL INFORMATION

1. Name of the Course : **Craft Instructor Training**
2. Duration of Instructor Training : 1 Year (Two semesters each of six months duration).
3. Subjects covered in the Semesters : Detailed in Section - C
4. Name of the Subject : **TRADE THEORY –I & TRADE PRACTICAL-I**
5. Applicability : **DRAUGHTSMAN CIVIL**
6. Examination : AITT to be held at the end of each semester.
7. Space Norms : (a) One class room of minimum 30 sq.m. area having Minimum width of 5 m.and with 6000 lumen
(b) Drawing Hall : 100 sq. meter having minimum width of 8 m. and with 20000 lumen
The electrical equipments of Class room should conform to minimum 3 star Building energy rating as per Bureau of Energy Efficiency (B.E.E.)
8. Power Norms : (a) 1 KW for Class room
(b) 3 KW for Drawing Hall.
9. Unit strength(Batch Size) : 20 Trainee
10. Entry qualification : Diploma/Degree in Civil or relevant Engineering from AICTE recognized Board / University. OR
National Trade / Apprenticeship Certificate in the Draughtsman Civil / Surveyor trade
11. Trainers' Qualification : NTC/NAC in the trade of Draughtsman Civil or Surveyor trade with CITS (2 Semesters) and 5 years' post qualification experience
OR
Diploma/Degree in Civil Engineering from recognized board or University with 5 years'/2 year's post qualification experience respectively.

12. Desirable : Passed National Craft Instructor Training course in Draughtsman Civil / Surveyor trade.

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

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

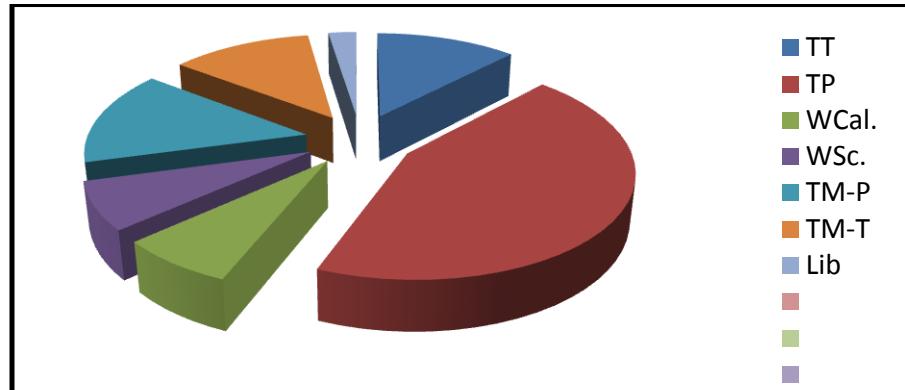
	SUBJECTS	Hrs. / Week	% of time allotted	Marks	Sessional	Full Marks	Pass Marks		
							Exam.	Sessional	Total
First semester	Trade Practical – 1	20	50	200	30	230	120	18	138
	Trade Theory - 1	6	15	100	20	120	60	12	72
	Workshop Cal.	6	15	75	-	75	45	-	45
	Workshop Sc.	6	15	75	-	75	45	-	45
	Library	2	5	-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

Subject	Time in %	Marks in %
Trade Practical	45	38
Trade Theory	12.5	20
Total for Trade	57.5	58
Training Methodology	15	19

Hourly Distribution

for 2 semesters Pass marks: 720

TOTAL: 1200



(Practical)	Hours	Marks
Training Methodology (Theory) + IT	12.5	10
Total for Training Methodology & IT	27.5	29
Workshop Cal.	7.5	6.25
Workshop Sc.	7.5	6.25
Library	2.5	-

marks

D. SYLLABUS OF TRADE: DRAUGHTSMAN (CIVIL) UNDER CRAFT INSTRUCTOR TRAINING SCHEME SEMESTER - I

WEEK NO.	TRADE THEORY	Hours	Marks	PRATICAL	Hours	Marks
1 & 2	(1) Principles of representation and construction of different types of scale, recommended scale for drawing with reference to IS Codes. (2) Familiarization of various Building	12	05	(1)Construction of ordinary scale, plain, Diagonal, Vernier, Comparative and scale of chords (2)Orthographic, Isometric and Oblique projections.	40	10

	<p>Materials: Bricks, Cement, Lime, Sand, Stone, Steel, Concrete etc.</p> <p>(a) Bricks:- Manufacturing of bricks, Types of Bricks, Characteristics of good bricks, Tiles, Terracotta, Stone Ware and Earthen ware.</p> <p>(b) Cement: - Manufacturing, Types, Test of good cement.</p> <p>(c) Lime: - manufacturing, Types.</p> <p>(d) Timber:- Structure, Disease and Defects of Timber, Seasoning, Preservation and utility.</p> <p>(e) Alternate materials to timber: Plywood, Block board, particle board, fireproof reinforced plastic (FRP) and MDF etc.</p>			<p>Dimensioning as per IS.</p> <p>(3) Section and Surface developments of Solids.</p> <p>(4) Brick bonding Different types of Bond, arrangement of bricks in different layers as per thickness of wall, piers, coping etc</p>		
3 & 4	<p>(1) Sequence of construction of building , Different parts of building</p> <p>(2) masonry work:- Types of masonry</p> <p>(a) Brick Masonry- Principles of construction of bond. Tools and equipments used, Scaffolding.</p> <p>(b) Stone Masonry- Terms used , Principles of construction, Classification, Composite Masonry and Strength of masonry</p>	12	05	<p>(1) Stone Masonry- Different types including Stone Joints, Composite Masonry.</p> <p>(2) Flooring- Different types.</p> <p>(3) Types of shoring and Scaffolding in details.</p>	40	10
5 & 6	<p>(1) Foundation- Purpose, classification Of soil, Concept of Different Types of load, Causes of failure of foundation and its remedies, Bearing capacity of soil, dead load and live loads and seismic loads, Types of foundation. Setting out</p>	12	10	<p>1) Types of foundations- different types, piles and its types, Footing Grillages, Raft & Well Foundations.</p> <p>(2) D.P.C:- in different places including plinth protection.</p>	40	20

	<p>of building on ground excavation, shoring, simple machine foundation etc.</p> <p>(2)D.P.C-Dampness in building and damp proof course/Materials. Method of prevention of dampness in building.</p> <p>(3)Mortar:-Types, proportion and mixing plastering and pointing.</p> <p>(4)Paints and varnishes:-various types and application including latest types.</p>					
7 & 8	<p>(1)Ground Floor- types, method of construction and their uses</p> <p>(2)Arches- Technical Terms, Types of Arches. Forms - brick, stone and concrete. Lintel - types and materials used. Centering, Bending and binding of reinforcement.</p>	12	10	<p>(1)Details of upper floors – wooden floors, stone floors, brick floor and others.</p> <p>(2)Forms arches , lintel and centering</p> <p>(3)Carpentry joints – Different types.</p>	40	20
9 & 10	<p>(1) Doors, Windows and ventilators – types, materials, location, size.</p> <p>(2) Fixtures and fastenings used in door, window and ventilators.</p> <p>(3)Roof – types of roofs, roof Covering (including water-proofing) – and components of a roof. Types of roof trusses: King Post & Queen Post etc.</p> <p>(4)Classification and construction of upper flooring, General principles of construction of masonry & R.C.C.</p>	12	10	<p>(1)Doors – Different types</p> <p>Window - Different types</p> <p>(2) Pitched roof – Details of Pitched roof, Roof covering types, King post & Queen Post Truss with joints.</p> <p>(3)Carpentry joints - terms and classification of joints.</p>	40	20

	(5)Carpentry joints - terms and classification of joints.					
11 & 12	Stair – Terms, Forms, Materials, Planning and Designing of stair and Details of construction.	12	10	Stair – Brick, Stone, Wooden, & steel and R.C.C – Types of Stair - Open newel, Dog legged, Geometrical, Bifurcated & Spiral Stair.	40	20
13-17	(1) Surveying – Chain Surveying principle, Instruments employed, use, care & maintenance, field problems, entry of field book, plotting etc. (2) Introduction to plane table survey, Instruments used; care & maintenance, field problems etc. (3) Prismatic Compass – Traversing with compass, Instruments used, Care and adjustment of instruments, field problems. (4) Levelling – Instrument and accessories their uses, Description of Level Book and their entry. R.L calculation by H.I method & Rise fall method. Differential Levelling. Application of chain and levelling to building Construction. Plotting, Preparation of contour computing earth works by spot level and contours. Setting out work. (5) Theodolite Traversing for measuring Horizontal & Vertical angles.	30	25	Survey Practical (Field Work) 1) Chain Triangulation. 2) Chain Traverse with Prismatic compass. 3) Plane Table Survey. Levelling – Road Project. Theodolite Traverse- Taking Reading of Vertical & Horizontal Angles. 6) Plotting- Plotting and Mapping the Data collected from the above field work.	100	50

18-22	(i) Commands of CAD software and their uses. (ii)Preliminary Concept of Architectural Design Desktop Software presently used.	30	25	Installation of CAD software. Elementary Command of CAD software, Project work in Auto CAD. Commands used in Architectural Design Desktop Software.	100	50
23&24	Project work and Site Visit related to Civil Works					
25-26	Revision & Final Exam					

**E. List of Tools & Equipment for a batch of 20
Trainees
Trade – Draughtsman (Civil) Semester - I**

Sl. No.	Description	Quantity
1.	TRAINEE'S KIT Box drawing instrument containing one 15 cm compass with pin point, pin point & lengthening bar, one pair spring bows, rotating compass with interchangeable ink and pencil points, drawing pens with plain point & cross point, screw driver and box of leads.	20 sets
2.	Protractor celluloid 15 cm semi- circular.	20 sets
3.	Scale card board- metric set of eight A to H in a box 1: 1, 1:2, 1:2:5, 1: 5, 1:10, 1:20, 1:50, 1:100,1:200, 1:500, 1:1000, 1:2000,1:1250, 1:6000, 1:38 1/3, 1:66 2/3	20 sets
4.	Scale –Metric and section wooden 30 cm long marked with eight scales -1:1, 1:2, 1:2:5, 1:10, 1:20, 1:50, 1:100, 1:5.	20 sets
5.	Scales plotting box wood 6 metric scales 30 cms long with offset scales.	20 sets
6.	Set square transparent 2 mm thick with bevelled edges 45 degree 20 cm.	20sets
7.	Set square celluloid 2mm thick with bevelled edges 60 degrees 25cm.	20 sets
8.	Board drawing 1250 mmX900mm	20 sets
9.	Square T 1250mm/Mini drafter	20sets

General Outfit :

1.	Geometrical Models (wooden) as per given below :	
	i) Cube 08 cm sides.	2
	ii) Rectangular parallel piped 8cmX15cm	2
	iii) Sphere 8cm dia.	2
	iv) Right circular cone 8 cm dia base and 15 cm vertical height	2
	v) Square pyramid 8cm side base and 15 cm vertical height	2
	vi) Cylinder 8 cm dia. 15 cm height.	2
	vii) Prisms triangular 8 cm sides triangle and 15 cm length.	2

	viii) Prism hexagonal 8 cm side's hexagon and 15 lengths	2
2.	French curves transparent plastic set of 12	4 nos.
3.	Flexible curves 80 cm long	8 nos.
4.	Elliptic trammel with ink and pencil for not less than 10 cm minor axis complete in a case.	1 nos.
5.	Radius curve metric 3 mm to 15 mm	4 nos.
6.	Brass parallel rulers in a case.	4 nos.
7.	Calculator Scientific	2 nos.
8.	Planimeter sliding bar pattern 70 cm complete in case with magnifier and instructions reading in metric units.	1 nos.

9.	Beam compass with fine adjustments with ink and pencil points and two chromium plated weights 30 cm in wooden case.	2 nos.
10.	Proportional dividers 15 cm	4 nos.
11.	Personal computer with latest configuration min. 19 inch. LED screen and graphic card with latest operating system -	10 nos.
	a) CAD software for 10 users	1 no.
	b) Plotter A 0 size	1 nos.
	c) Printer (Desk jet/ Leaser jet)	1 nos.
12.	Laptop with latest configuration	1 nos.
13.	Almirah steels (Major) 6' / higher	2 nos.
14.	Chest of drawers 8 drawers (standard)	4 nos.
15.	Draughtsman table.	20 nos.
16.	Draughtsman stool (Revolving)	20 nos.
17.	Training Officer's table (big size full secretariat) (6ft.x4ft.)	1 nos.
18.	Chair for Training Officer	1 nos.
19.	Architectural Desktop Software (latest)	5 nos.
20.	Server work station with latest configuration	1 nos.
21.	Broad Band connection	
22.	UPS 5KV	2 nos.
23.	Computer table	10 nos.
24.	Computer Chair.	21 nos.
25.	Furniture for server, printer plotter	1 no each
26.	White Board (6' x 4')	1 no.
27.	DLP Projector (2000 lumens or higher)	1 no.
28.	First aid box	1 no.
29.	Screen for projector (motorized)	1 no.
30.	Fire Extinguisher	1 no.

SURVEY INSTRUMENTS

SL. NO	DESCRIPTION	QUANTITY
1.	Land measuring chains 30 meters.	4
2.	Steel tape 30 meters long.	2
3.	Ranging rods wooden fitted	16
4.	Optical square PWD pattern	4
5.	Optical square box type circular	1
6.	Dumpy level builder 25 cm local length X 23 mm complete with box and accessories and stand.	2
7.	Levelling staffs 4 metres reading to 5 mm telescopic type.	1 Telescopic
		2 set piece
8.	Plain table with stands and accessories – Alidade, trough compass, spirit level 6", U –forks and Plumb-bob etc. (1 set with Telescope alidade)	2 sets
9.	Prismatic compass with stands.	2 nos

**LIST OF TOOLS FOR ALLIED TRADE USED IN
CONSTRUCTION WORK ETC.**

1.	Shovel	2
2.	Pan M.S 25 cm dia	6
3.	Farma wooden for measuring aggregates	1
4.	Bucket G.I, 35 cm dia	4
5.	Masons plumb rule with sprit level	4
6.	Masons square 30 cm X 30 cm	4
7.	Sieve for sand 1 mm/100 X60cm	1
8.	Trowel 25 cm X 10 cm	4
9.	Sieve for sand 22 mm/100X60 cms	1
10.	Tool caulking set CB 6	2 sets
11.	Brick hammer with handle	4
12.	Rule fold wooden 60 cm	4
13.	15 cm painting trowel	4
14.	Line pins corner block	4pair each
15.	Motor board	4
16.	Wire brush	4
17.	Wooden float	4
18.	Steel float	4
19.	Spirit level 30 cm	4
20.	Chisel 5 cm hammer headed	4
21.	Bolster	4
22.	Claw hammer	4
23.	Spade	4
24.	Measuring tape steel 30 metres	4
25.	Ladder aluminium 3 metres	4
26.	Pickaxe	2
27.	Hammer 250 Gms	1
28.	Crow bar 3 cm dia 1.5 lag	2
29.	Hand hammers 1 kg.	2
30.	Binoculars	2
31.	Surveyors umbrella	2 no's
32.	Light tracing board fitted with glass and framed and lamp	2 no's

**F. FURNITURE,
ACCESSORIES
AND AUDIO
VISUAL AIDS FOR
THE SEMESTAR-I AND SEMESTAR-II (COMMON FOR
ALL ENGG. TRADES)**

Sl. No.	Description	Quantity
01	Class Room Chairs (armless) / Dual desk may also be allowed	20 /10
02	Class Room Tables (3ft X 2ft) / Dual desk may also be allowed	20 /10
03	Chair for Trainer (armed) movable	01
04	Table for Trainer (4 ½ ft X 2 ½ ft) with Drawer and cupboard	01
05	LCD / LED Projector	01
06	Multimedia Computer System with all accessories with UPS (.5 KVA)	01 set
07	Computer Table	01
08	White Board (6ft X 4 ft.)	01 no.
09	LCD Projector Screen	
10	Air Conditioner 1.5Ton (OPTIONAL)	02
11	Wall Clock	01 no.
12	Wall charts, Transparencies and DVDs related to the trade	As required
13	Laser Printer with scanner	01
14	Steel Cupboard with 8 pigeon lockers	3
15	Work bench for fitters with two vices of 100mm	2
16	Steel cupboard 180x90x45cm	2
17	Steel cupboard 120x60x45cm	2
18	Multi drawer tool rack trolley with minimum 4 drawers and 20 tool capacity	04
19	First aid box.	1

Syllabus for the subject

of

TRADE THEORY-II

AND

TRADE PRACTICAL-II

Under

CRAFT INSTRUCTOR TRAINING SCHEME

DRAUGHTSMAN CIVIL

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F	Furniture, Accessories And Audio Visual Aids	10
G	List of Expert Members	11

G. GENERAL INFORMATION

11. Name of the Course : **Craft Instructor Training**
12. Duration of Instructor Training : 1 Year (Two semesters each of six months duration).
13. Subjects covered in the Semesters : Detailed in Section - C
14. Name of the Subject : **TRADE THEORY –II & TRADE PRACTICAL-II**
15. Applicability : **DRAUGHTSMAN CIVIL**
16. Examination : AITT to be held at the end of each semester.
17. Space Norms : (a) One class room of minimum 30 sq.m. area
having Minimum width of 5 m.and with 6000 lumen
(b) Drawing Hall : 100 sq. meter having minimum width
of 8 m. and with 20000 lumen
**The electrical equipments of Class room should
conform to minimum 3 star Building energy rating as
per Bureau of Energy Efficiency (B.E.E.)**
18. Power Norms : (a) 1 KW for Class room
(b) 3 KW for Drawing Hall.
19. Unit strength(Batch Size) : 20 Trainee
20. Entry qualification : Diploma/Degree in Mechanical/Production / Industrial
Engineering from AICTE recognized Board / University
OR
Completed Semester – I of DRAUGHSTMAN CIVIL trade
under CITS
21. Trainers' Qualification : NTC/NAC in the trade of Draughtsman Civil trade with CITS
(2 Semesters) and 5 years' post qualification experience
OR
Diploma/Degree in Civil Engineering from recognized board or
University with 5 years'/2 year's post qualification experience
respectively.
22. Desirable : Passed National Craft Instructor Training course in Draughtsman Civil / Surveyor trade.

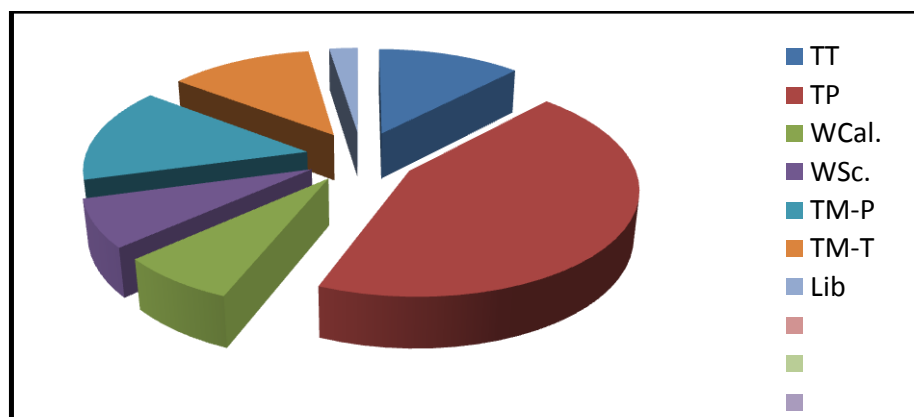
In case of two units, one trainer must be Degree in Engineering.

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

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

Hourly Distribution

TOTAL: 1200 marks for 2 semesters Pass marks: 720



Subject	Time in %	Marks in %
Trade Practical	45	38
Trade Theory	12.5	20
Total for Trade	57.5	58
Training Methodology (Practical)	15	19
Training Methodology (Theory) + IT	12.5	10
Total for Training Methodology & IT	27.5	29
Workshop Cal.	7.5	6.25
Workshop Sc.	7.5	6.25
Library	2.5	-

**I. SYLLABUS OF TRADE: DRAUGHTSMAN (CIVIL) UNDER CRAFT INSTRUCTOR TRAINING SCHEME
SEMESTER – II**

WEEK NO.	TRADE THEORY	Hours	Marks	PRATICAL	Hours	Marks
1,2&3	(1)Residential Building, principles of planning & orientation. (2)local building bye laws as including IS code, types of residential building, industrial and public buildings, services, utilities which constitute dwelling and public building. (3) Concept of Multi-storied building.	12	10	(1) Drawing details of single / double storied residential building. Drawing plan, elevation, section, with aid of line diagrams. Layout and detailing of a residential building.	48	20
4 & 5	(1) Estimate: method and find out quantities of materials for residential and public building- estimate for wood and reinforcement for the above construction.	08	05	1) Concept of electric layout. (2) Wiring in different system, fixing and connecting appliances for domestic lighting.	32	10
6 & 7	(1) Introduction to roads. General principles of alignment, classification and construction of different types of roads (as per I.R.C. classifications). (2) Indian railways their gauges construction of permanent way, different rail section, use of stone ballast in railway track, use and types of sleepers including fishplate and base plate in railway.	08	10	(1) Cross-section showing the different type of roads. (2) Drawing typical cross-section of railway track, embankment, lay out plans of railway platforms. (3) Preparing drawing of a masonry culvert and take out various quantities of items of work and prepare abstract of cost.	32	20
8 & 9	(1)Bridge – Introduction to Bridges, Component parts of bridge, Classification of culverts, Bridge	08	10	<u>Drawing details:</u> (1)Types of rivets and riveted joints.	32	20

	<p>types Location of bridge. Tunnels, Rules used for sizes of different members.</p> <p>(2)Introduction on water resource engineering : definition of terms used in irrigation & hydrology like- duty, delta, intensity of irrigation, Hydrograph , peak flow, Run off, Catchment area –CCA, rabi, Kharif etc.</p>			<p>(2)Types of standards steel sections and built up section used for Girders and Stanchion.</p> <p>(3)Arched bridge.</p>		
10 & 11	<p>(1) Storage/ Diversion head works. Definition and types of Dams</p> <p>(2) Reservoir – types of reservoirs.</p>	08	10	<p>(1)Preparation of Drawing showing various pipe joints for underground drainage, Method of sanitary fittings in multi-storied buildings, Manholes & Septic tank.</p> <p>(2)Drawing Details of RCC members, Rectangular beams, Lintel, chajja, Slab, Stair including column with footing and continuous column showing different position of reinforcement, preparing bar bending schedule.</p>	32	20
12 & 13	<p>(1)Canals – classification of canal and distribution system, canal structure viz head regulator, canal outlet, escape etc.</p> <p>(2)Types of cross drainage works viz Aqueduct, Syphon Aqueduct, Super passage, Syphon , Super passage , Level crossing , irrigation culverts, inlets and outlets.</p> <p>(3) Concepts of element of water power development and various civil engineering structure of hydro-electric scheme i.e. forbay, Penstock, turbines, Power house etc.</p>	08	10	<p>(1)Drawing of different types of irrigation structure viz – Dams, Barrages, Weir etc. with the help of given sketch & data.</p> <p>Longitudinal section of distributaries at different river diversion, types of outlets and regulators.</p>	32	20

14 - 16	(1) Public health engineering – Terms used in public health engineering, system of sanitation-house plumbing, sanitary fittings etc. (2) R.C.C. - Introduction to R.C.C, uses, materials proportion and form work including bending and binding of bars and construction ref to IS Code (sp-34). Reinforcement brick work. Concept of wind load and seismic load. Provision for Lift and escalator. (3)material used for R.C.C. construction selection of materials coarse aggregate, fine aggregate, cement, water, reinforcement, characteristics & method of mixing concrete-hand /machine. Slump test.	12	15	(1)Layout of drainage and sewage system, ater supply system of building. (2)Rain water harvesting and recharging. (3)Concept of drawings of public buildings such as rest house, Hospital, high school, cinema/ theater / super market, work shop building, railway station yard etc.	48	30
17	(1)Introduction to structural drafting and arrangement of drawing standard.	04	05	-----DO-----	16	10
18 & 19	Concept of civil engineering drawing using Architectural Desktop Software.	08	10	Practice of civil engineering drawing using Architectural Desktop software. Project work by advanced desktop	32	20
20 & 22	(1) Introduction to remote sensing application in civil engineering. Ideal remote sensing system, atmospheric windows, ranges of sensing system, spectral signature, types of sensors. (2)Basic principle of Photogrammetry, Arial photography, interpretation , various application like water resources, terrain, evolution, forestry, agriculture, land use, visual interpretation, ground water verification, radio meter.	12	15	-----DO-----	48	30

	(3) Multispectral, multitemporal, multistage concept, satellite images, FCC, digital image processing, image restoration, image enhancement, false color imagery. (4) Pattern recognition and digital signal processing, basic introduction, Band interleaved method, clustering analysis, statistical techniques.					
23 & 24	Project work and Site Visit related to Civil Works					
25 & 26	Revision & final Examination					

**J. List of Tools & Equipment for a batch of 20 Trainees for the trade of Draughtsman (Civil)
–Semester - TT- II Under Craft Instructors Training Scheme**

Note :- The Tools & Equipments are the same for the Semester - II as given in the Tool list of Semester - I, however the following additional equipments is given below:

ADDITIONAL EQUIPMENTS :-

1	Digital theodolite with latest model	- 1 No.
2	Instrument for total station with latest model.	-1 No.
3	GPS (latest model).	- 1No.
4	Architectural Desktop Software for 5 Users.	- 1 No.
5	Q – Pro / Built Master software for Estimation	1 no.

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

01	Class Room Chairs (armless) / Dual desk may also be allowed	20 /10
02	Class Room Tables (3ft X 2ft) / Dual desk may also be allowed	20 /10
03	Chair for Trainer (armed) movable	01
04	Table for Trainer (4 ½ ft X 2 ½ ft) with Drawer and cupboard	01
05	LCD / LED Projector	01
06	Multimedia Computer System with all accessories with UPS (.5 KVA)	01 set
07	Computer Table	01
08	White Board (6ft X 4 ft.)	01 no.
09	LCD Projector Screen	
10	Air Conditioner 1.5Ton (OPTIONAL)	02
11	Wall Clock	01 no.
12	Wall charts, Transparencies and DVDs related to the trade	As required
13.	Laser Printer with scanner	01
14.	Steel Cupboard with 8 pigeon lockers	3
15.	Work bench for fitters with two vices of 100mm	2
16.	Steel cupboard 180x90x45cm	2
17.	Steel cupboard 120x60x45cm	2
18.	Multi drawer tool rack trolley with minimum 4 drawers and 20 tool capacity	04
19.	First aid box.	1

G. LIST OF TRADE COMMITTEE MEMBERS

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