

Syllabus for the subject

Of

**TRADE THEORY-I  
AND  
TRADE PRACTICAL-I**

Under

**CRAFT INSTRUCTOR TRAINING SCHEME (CITS)**

**SURVEYOR TRADE**

**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 enable comprehending the given job and subsequent planning to complete the task/job. Thus it is imperative for any Instructor to have trade 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 the most important criteria as in ITI system, skill is the ultimate requirement. To perform a task/job, both theoretical and practical knowledge is very much needed. Thus Trade Technology is regarded as basic/hard skills which form the base of all skill based training.

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

## **B. GENERAL INFORMATION**

1. Name of the Course : **Craft Instructor Training**
2. Duration of Instructor Training : 1 Year (Twelve months) (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 : **SURVEYOR TRADE**
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
8. Power Norms : (a) Class Room : 1 KW (6000 lumen)  
(b) Drawing Hall : 3 KW (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.)**
9. Unit Strength (Batch Size) : 20
10. Entry Qualification : (a) NTC / NAC in the trade of Surveyor  
**Or**  
(b) Diploma or Degree in the relevant branch of Engineering from recognized board or University.
11. Trainer's Qualification : NTC/NAC in the trade of Surveyor 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 Qualification : Passed National Craft Instructor Training course In same or relevant trade.

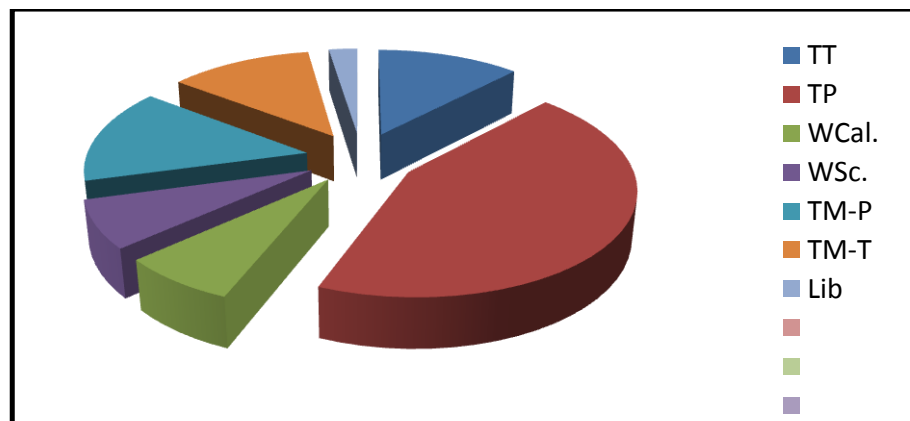
**In case of two units, one trainer must be Degree in Engineering.**

### 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
<b>First semester</b>	Trade Practical – 1	20	50	200	30	<b>230</b>	120	18	<b>138</b>
	Trade Theory - 1	6	15	100	20	<b>120</b>	60	12	72
	Workshop Cal.	6	15	75	-	<b>75</b>	45	-	45
	Workshop Sc.	6	15	75	-	<b>75</b>	45	-	45
	Library	2	5	-	-				
	<b>TOTAL for Sem. - I</b>	<b>40</b>		<b>450</b>	<b>50</b>	<b>500</b>	<b>270</b>	<b>30</b>	<b>300</b>
<b>Second semester</b>	Trade Practical – 2	16	40	200	30	<b>230</b>	120	18	<b>138</b>
	Trade Theory - 2	4	10	100	20	<b>120</b>	60	12	72
	Training Methodology - Practical	12	30	200	30	<b>230</b>	120	18	<b>138</b>
	Training Methodology - Theory + IT	6+2	20	100	20	<b>120</b>	60	12	72
	<b>TOTAL</b>	<b>40</b>		<b>600</b>	<b>100</b>	<b>700</b>	<b>360</b>	<b>60</b>	<b>420</b>
	<b>GRAND TOTAL</b>	<b>80</b>		<b>1050</b>	<b>150</b>	<b>1200</b>	<b>630</b>	<b>90</b>	<b>720</b>

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
<b>Total for Trade</b>	<b>57.5</b>	<b>58</b>
Training Methodology (Practical)	15	19
Training Methodology (Theory) + IT	12.5	10
<b>Total for Training Methodology &amp; IT</b>	<b>27.5</b>	<b>29</b>
Workshop Cal.	7.5	6.25
Workshop Sc.	7.5	6.25
Library	2.5	-

### **D. Week-wise Contents Index of First Semester**

Sl. No.	Week No.	Topic		Duration (Weeks)
		Trade Theory	Trade Practical	
1	1	Chain survey	Chain survey	1
2	2-4	Plane Table Survey	Plane Table Survey	3
3	5-6	Level Survey	Level Survey	2
4	7-9	Area of Closed Traverse, Heights & Distances	Theodolite Survey	3
5	10-11	Topographic Survey	Contouring by Spot Level Method	2
6	12-13	Vertical Intervals, Horizontal Equivalents, Method of determining Contours	Contouring by Cross-section Method	2
7	14-16	Interpolation of Contours, Preparing Contour Maps	Direct Contouring	3
8	17-19	Planimeter, Finding areas, Enlarging & Reducing	Topographic Survey	3
9	20-21	Survey Camps (Project Work)		2
10	22-26	Industrial visit (optional)/Revision/Preparatory Test/Final Examination.		5
<b>Total</b>				<b>26</b>

**E. SYLLABUS FOR THE TRADE: SURVEYOR**  
**UNDER CRAFT INSTRUCTOR TRAINING SCHEME**

Note: During the discussion of any Survey Equipments, related precautions and safety measures should be discussed.

Trade Theory				Trade Practical		
Sl. No.	Topics	Hours	Marks	Topics	Hours	Marks
01	Related information	06	06	Practice in Chain surveying-advanced type problems-locating details, booking, plotting, finishing in ink & colouring.	20	10
02	Related information	06	06	Practice in Plane table surveying-running an open traverse with Plane table, fixing details, inking, finishing, colouring and tracing.	20	10
03	Related information	06	06	Three point and two point problems.	20	10
04	Dumpy level & Auto level. Various methods of levelling, namely simple leveling, differential leveling, reciprocal leveling, fly leveling, check leveling, longitudinal sectioning, cross sectioning, etc. Plotting of sections & working profiles, establishment of gradients.	12	10	Level surveying-differential leveling, reciprocal leveling, fly leveling, longitudinal sectioning, cross sectioning & check levelling. Preparation of sections & working profiles. Setting out gradients.	40	18
05	Methods of calculating area of a closed traverse from coordinates.	06	08	Practice in Theodolite survey-running a closed & open traverse.	20	14
06	Working out problems on finding out areas of closed traverses, heights & distances-Box sextant-its description & use. Abney's level & its description.	06	06	Finding heights & distances of accessible & inaccessible objects with theodolite and chain and calculating the same-use of Box sextant.	20	12
07	Topographic survey and principle-instruments & accessories used in topographic survey-contours & their characteristics.	12	06	Contouring by spot level method including interpolation.	40	12
08	Contouring-contour intervals-selection of contour interval-characteristics & uses of	12	12	Contouring by cross section method including interpolation of contours (Grid method).	40	20

	contours. Vertical intervals, horizontal equivalents-methods of determining contours-comparison of different methods and their application.			Contour gradient-preparation of sections from contour map-computation of volume by Prismoidal & Trapezoidal formula. Establishment of gradient using Abney level, Ceylon Ghat Tracer and by using boning rod & sight rail.		
09	Interpolation of contours by different methods and preparing contour maps-computation of volume-Prismoidal & Trapezoidal formula. Construction & use of boning rods. Establishment of gradient using Ceylon Ghat Tracer, Delisle's Clinometer & Abney level. Preparation of field record for topographic surveys-height book-height tracing and colour trace.	12	12	Direct contouring using levels for vertical control, plane table & telescopic alidade for horizontal control.	40	22
10	Types of surveys for the location of a road-reconnaissance, preliminary & final location survey. Alignment of roads-embankment & cutting-road gradients-foundation, drainage, camber, super elevation, road surfaces such as earth road, water bound macadam & concrete pavements.	12	10	Road Project-reconnaissance, preliminary & final location survey including preparation of route map, traversing, leveling, preparation of sections, computation of earthwork & other materials.	40	18
11	Tacheometry-various methods of tacheometry-determination of horizontal & vertical distances by various methods.	06	08	Determination of horizontal & vertical distances by tacheometric method. Enlargement & reduction of plans & maps.	20	14
12	Different methods of finding area of irregular figures-planimeter-its principle, construction, use & precautions. Working out problems of areas by using planimeter. Enlarging & reducing of plans. Use of proportionate compass and pantographs and their uses.	18	10	Conducting topographic survey of undulated area by theodolite triangulation and plane table resection & intersection method using Indian pattern clinometers.	60	20
13	<b>Survey Camps (Project Work):</b> Carrying out contour survey, direct & indirect, of a small area in a hilly place by tachometer-working out proposed alignments on contour maps on various curves and calculation, marking of alignment of road on it.				80	20
14	Industrial visit (optional)/Revision/Preparatory test & Examination.					-



## E. List of Tools & Equipments

### For a batch of 20 Trainees for the trade of - **SURVEYOR**

Under CITS

#### A. Trainee's Kit for 20 Trainees and One Instructor

Sl. No.	Description	Quantity
1	Engineering Instrument Box	21
2	Protractor 15 cm full circular	21
3	Card board/ plastic metric scale set- A to H	21
4	Celluloid set square 45° & 60°	21 each
5	Drawing board 1250 x 900 mm	21
6	T square 1250 mm/ Mini drafter	21
7	Erasing shield small size	10
8	Architect's & builder's template	10
9	Drawing machine (Horizontal type)	21
10	French curve- set of 12	21
11	Flexible curve 80 cm long	21
13	Metallic tape 15 m	21
14	Scientific calculator pocket size	21

#### B. General Outfit

Sl. No.	Description	Quantity
1	Planimeter sliding bar pattern 70 cm with magnifier-metric	2 (One digital)
2	Pentagraph-brass with accessories-60 cm	1
3	Tracing table with plate glass-1250 x 900mm	1
4	Computer-latest version	5
5	UPS 650 VA offline	6
6	Computer with latest configuration with printer	1 set
7	Computer table	6
8	Computer chair-revolving type	21
9	DLP Projector-2000 lumen or higher	1
10	White board-6' x4'	1
11	Almirah 1800 x 1200 x 450mm	3
12	Chest of drawers-8 drawers	2
13	Draughtsman table	21
14	Draughtsman stool-revolving type	21
15	Executive table 6' x 6'	1
16	Revolving chair with arm	1
17	Trainees' lockers	4
18	Book shelf	2
19	Wooden geometry box for chalk board	2
20	First Aid kit	1

21	Hub/Switch/Access point	1
22	LAN & internet connectivity	As required
23	A3 Printer-colour	1
24	Q-PRO/Built Master software for estimation	1
25	CAD software for 5 users-latest version	1
26	Map & Land Survey software	1 each

### **C. Survey Instruments**

Sl. No.	Description	Quantity
1	Land measuring chain 30m	5
2	Metallic tape 30m	4
3	Steel tape 20m	2
4	Ranging rod-3m	20
5	Optical square PWD pattern	5
6	Optical square-box type, circular	5
7	Dumpy level-complete set	5
8	Auto level	4
9	Digital level along with bar coded staff	5
10	Leveling staff-telescopic type	5
11	Plane table with stand	5
12	Alidade	5
13	Telescopic alidade	2
14	Trough compass	5
15	'U' frame with plumb bob	5
16	Theodolite with stand	4
17	Electronic theodolite with Moonlight LCD display with tripod	1
18	Total station-latest version	1
19	GPS-latest version with base & rover communication options	2

**List of Consumables for the Trade of Surveyor under CITS**

<b>Sl. No.</b>	<b>Consumables</b>
1	Drawing sheet-A1 & A2 size
2	Tracing paper roll
3	Drawing pencil-HB, 2H, etc.
4	Eraser
5	Adhesive tape
6	Drawing pen/ Rotring pen
7	Drawing ink
8	Color pencil
9	Ammonia paper roll
10	Ammonia liquid
11	Machine made drawing paper
12	Xerox paper A4 size
13	CAD Software

**F.**

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

<b>SL. No.</b>	<b>Name of the tools and equipment</b>	<b>Qty per unit</b>
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

**G. LIST OF TRADE COMMITTEE MEMBERS**

<b>Sl. No.</b>	<b>Name &amp; Designation Sh./Mr./Ms.</b>	<b>Organization</b>	<b>Mentor Council Designation</b>
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

Syllabus for the for the subject  
Of  
**TRADE THEORY-II**  
&  
**TRADE PRACTICAL-II**  
Under  
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## **A. RATIONALE**

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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 enable comprehending the given job and subsequent planning to complete the task/job. Thus it is imperative for any Instructor to have trade skill so that same can be transferred.

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

## **B. GENERAL INFORMATION**

12. Name of the Course : **Craft Instructor Training**
13. Duration of Instructor Training : 1 Year (**Twelve months**) (two semesters each  
of six months duration)
14. Subjects covered in the semesters : Detailed in Section-C
15. Name of the subjects : TRADE THEORY-II & TRADE PRACTICAL-II
16. Applicability : **SURVEYOR TRADE**
17. Examination : AITT to be held at the end of each semester
18. 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
19. Power Norms : (a) Class Room : 1 KW (6000 lumen)  
(b) Drawing Hall : 3 KW (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.)**
20. Unit Strength (Batch Size) : 20
21. Entry Qualification : Completed Semester – I of SURVEYOR trade under  
CITS **OR** Diploma / Degree in Civil or relevant  
Engineering from AICTE recognized Board /  
University
22. Trainer's [Qualification](#) : NTC/NAC in the trade of Surveyor with CITS  
(2 Semesters) and 5 years' post qualification  
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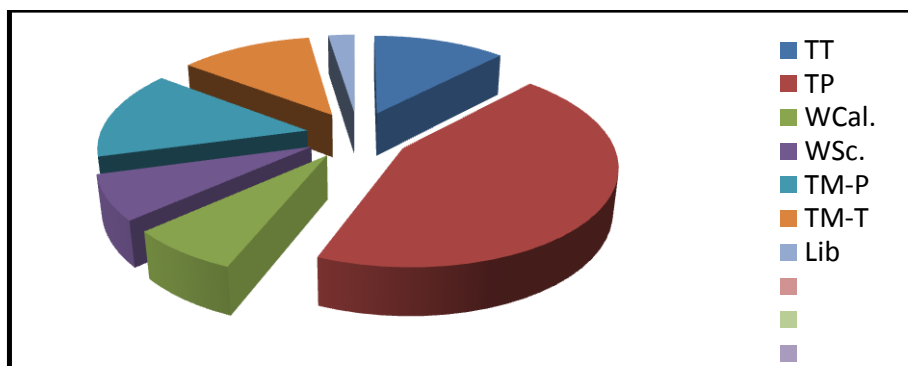


### C. SEMESTER WISE ALLOTMENT OF TIME & MARKS AMONG THE SUBJECTS FOR CITS

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

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
<b>Total for Trade</b>	<b>57.5</b>	<b>58</b>
Training Methodology (Practical)	15	19
Training Methodology (Theory) + IT	12.5	10
<b>Total for Training Methodology &amp; IT</b>	<b>27.5</b>	<b>29</b>
Workshop Cal.	7.5	6.25
Workshop Sc.	7.5	6.25
Library	2.5	-

### D. Week-wise Contents Index of Second Semester

Sl. No.	Week No.	Topic		Duration (Weeks)
		Trade Theory	Trade Practical	
1	1-2	Problems on Curves	Setting out different types of Curves	2
2	3	Pantograph & Planimeter	Reducing & Enlarging using Pantograph & Planimeter	1
3	4-5	Methods of taking Offsets, Survey Maps & Boundaries	Measurement of Fields	2
4	6	Meridian, Substance Bar	Tracing & Inking	1
5	7	Latitude & Azimuth	Azimuth calculation	1
6	8-12	Computer Aided Design & Drafting (CAD)		5
7	13	Drawing Office, BIS Code of Practice	Conventional Signs & Symbols	1
8	14	Further Practice in Chain Survey		1
9	15	Further Practice in Compass Survey		1
10	16-17	Further Practice in Plane Table & Theodolite Survey		2
11	18	Further Practice in Level Survey		1
12	19	Roads & Railways	Cross-sections of Roads & Railways	1
13	20-21	Further Practice on Computer/CAD		2
14	22-26	Industrial visit (optional)/Revision/Preparatory Test/Final Examination.		5
<b>Total</b>				<b>26</b>

**E. SYLLABUS FOR THE TRADE: SURVEYOR**  
**UNDER CRAFT INSTRUCTOR TRAINING SCHEME**

Note: During the discussion of any Survey Equipments, related precautions and safety measures should be discussed.

Trade Theory				Trade Practical		
Sl. No.	Topics	Hours	Marks	Topics	Hours	Marks
01	Problems on simple, compound & vertical curves-types of transition curves & vertical curves.	08	04	Setting out simple curves by chain & tape by different methods-setting out compound curves & transition curves by theodolite-setting out vertical curves.	32	08
02	Parts of pantograph & planimeter.	04	04	Reducing & enlarging the plans and maps using pantograph and proportionate compass. Use of planimeter.	16	08
03	Methods of taking offsets on obstructed lines & offset lines, field measurement in triangle & offset systems. Method of fixing survey maps on boundaries.	08	04	Measuring offsets of obstructed lines, measurement of field in triangle & offset systems, base line system, fixing, missing, land demarcation.	32	08
04	Convergence of meridian-substance bar & its use. Glossary of terms.	04	04	Tracing & inking taluk, district and state maps. Observation of substance bar & its calculation.	16	08
05	Computation of latitudes and azimuth.	04	06	Azimuth observation & calculation.	16	12
06	Introduction to computer aided drawing-working with CAD-setting limits-drawing lines-using grid & snap-saving work-drawing shapes-Exit & Quit commands. Editing, adding dimension and text. Editing drawing using various MODIFY commands. Developing building drawings with CAD. Preparation of estimate.	20	20	Working with CAD. Use of various commands. Adding dimensions and text. Development of 2D drawings. Preparation of drawings and estimates of buildings.	80	35

07	Introduction to drawing office, introduction to Bureau of Indian standards (BIS) code of practice for general & architectural drawing. Basics of orthographic projection.	04	08	Conventional signs & symbols used in Engineering survey-dimensioning as per IS: 696. Drawing of a residential building.	16	10
08	Numerical problems on Chain survey & Compass survey.	04	06	Practice in Chain survey. Use of optical square and cross staff (PWD type). Practice on Compass survey-magnetic & true meridian, declination & its variation with local attraction.	16	12
09	Practice in leveling and theodolite survey.				20	26
10	Introduction to roads-general principle of alignment-super elevation of roads. Introduction to railways-their gauges.	08	10	Cross section of roads and railway tracks.	32	16
11	Modern Survey Instruments-Digital Theodolite-measurement of angles by various methods-Traversing using Digital theodolite (open & closed).	04	12	Setting up of Digital theodolite. Measurement of horizontal & vertical angles. Traversing using Digital theodolite.	16	20
12	Total Station-Measurements of angles & coordinates-setting out of angles & lines. Traverse survey of closed & open fields-determination of enclosed area using total station. Uses of GPS-determination of coordinates. Photogrammetry-terrestrial & aerial photogrammetry.	04	14	Measurements of angles and coordinates-determination of height-determination of area using Total Station. Traversing (open & closed) using total station. Determination of the coordinates of the points using GPS.	16	25
13	CAD software commands & use of different menus. Commands & menus of Map & Land survey software.	08	08	More practice on Auto CAD. Practice on Map & Land survey software.	32	12
14	Industrial visit (optional)/Revision/Preparatory test & Examination.					

## E. List of Tools & Equipments

### For a batch of 20 Trainees for the trade of – SURVEYOR

Under CITS

#### A. Trainee's Kit for 20 Trainees and One Instructor

Sl. No.	Description	Quantity
1	Engineering Instrument Box	21
2	Protractor 15 cm full circular	21
3	Card board/ plastic metric scale set- A to H	21
4	Celluloid set square 45° & 60°	21 each
5	Drawing board 1250 x 900 mm	21
6	T square 1250 mm/ Mini drafter	21
7	Erasing shield small size	10
8	Architect's & builder's template	10
9	Drawing machine (Horizontal type)	21
10	French curve- set of 12	21
11	Flexible curve 80 cm long	21
13	Metallic tape 15 m	21
14	Scientific calculator pocket size	21

#### B. General Outfit

Sl. No.	Description	Quantity
1	Planimeter sliding bar pattern 70 cm with magnifier-metric	2 (One digital)
2	Pentograph-brass with accessories-60 cm	1
3	Tracing table with plate glass-1250 x 900mm	1
4	Computer-latest version	5
5	UPS 650 VA offline	6
6	Computer with latest configuration with printer	1 set
7	Computer table	6
8	Computer chair-revolving type	21
9	DLP Projector-2000 lumen or higher	1
10	White board-6' x4'	1
11	Almirah 1800 x 1200 x 450mm	3
12	Chest of drawers-8 drawers	2
13	Draughtsman table	21
14	Draughtsman stool-revolving type	21
15	Executive table 6' x 6'	1
16	Revolving chair with arm	1
17	Trainees' lockers	4
18	Book shelf	2
19	Wooden geometry box for chalk board	2
20	First Aid kit	1

21	Hub/Switch/Access point	1
22	LAN & internet connectivity	As required
23	A3 Printer-colour	1
24	Q-PRO/Built Master software for estimation	1
25	CAD software for 5 users-latest version	1
26	Map & Land Survey software	1 each

### **C. Survey Instruments**

<b>Sl. No.</b>	<b>Description</b>	<b>Quantity</b>
1	Land measuring chain 30m	5
2	Metallic tape 30m	4
3	Steel tape 20m	2
4	Ranging rod-3m	20
5	Optical square PWD pattern	5
6	Optical square-box type, circular	5
7	Dumpy level-complete set	5
8	Auto level	4
9	Digital level along with bar coded staff	5
10	Leveling staff-telescopic type	5
11	Plane table with stand	5
12	Alidade	5
13	Telescopic alidade	2
14	Trough compass	5
15	'U' frame with plumb bob	5
16	Theodolite with stand	4
17	Electronic theodolite with Moonlight LCD display with tripod	1
18	Total station-latest version	1
19	GPS-latest version with base & rover communication options	2

**List of Consumables for the Trade of Surveyor under CITS**

<b>Sl. No.</b>	<b>Consumables</b>
1	Drawing sheet-A1 & A2 size
2	Tracing paper roll
3	Drawing pencil-HB, 2H, etc.
4	Eraser
5	Adhesive tape
6	Drawing pen/ Rotring pen
7	Drawing ink
8	Color pencil
9	Ammonia paper roll
10	Ammonia liquid
11	Machine made drawing paper
12	Xerox paper A4 size
13	CAD Software

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

<b>SL. No.</b>	<b>Name of the tools and equipment</b>	<b>Qty per unit</b>
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

**G. LIST OF TRADE COMMITTEE MEMBERS**

<b>Sl. No.</b>	<b>Name &amp; Designation Sh./Mr./Ms.</b>	<b>Organization</b>	<b>Mentor Council Designation</b>
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	DGE&T (HQ)	Mentor



