

PAINTING TECHNOLOGY

NSQF LEVEL- 6



SECTOR – PAINTS & COATINGS

COMPETENCY BASED CURRICULUM
CRAFT INSTRUCTOR TRAINING SCHEME (CITS)



GOVERNMENT OF INDIA

Ministry of Skill Development & Entrepreneurship
Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City, Kolkata – 700091



PAINTING TECHNOLOGY

**(Applicable for Painter General, Domestic Painter & Industrial
Painter Trades under CTS)**

(Engineering Trade)

SECTOR – PAINTS & COATINGS

(Designed in 2020)

Version 1.0

CRAFT INSTRUCTOR TRAINING SCHEME (CITS)

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Developed By
Government of India
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1. COURSE OVERVIEW

The Craft Instructor Training Scheme is operational since inception of the Craftsmen Training Scheme. The first Craft Instructors' Training Institute was established in 1948. Subsequently, 6 more institutes namely, Central Training Institute for Instructors (now called as National Skill Training Institute (NSTI)), NSTI at Ludhiana, Kanpur, Howrah, Mumbai, Chennai and Hyderabad were established in 1960's by DGT. Since then the CITS course is successfully running in all the NSTIs across India as well as in DGT affiliated institutes viz. Institutes for Training of Trainers (IToT). This is a competency based course of one year duration. "Painting Technology" CITS trade is applicable for Instructors of "Painter (General), Domestic Painter & Industrial Painter" Trades.

The main objective of Craft Instructor training programme is to enable Instructors explore different aspects of the techniques in pedagogy and transferring of hands-on skills so as to develop a pool of skilled manpower for industries, also leading to their career growth & benefiting society at large. Thus, promoting a holistic learning experience where trainee acquires specialized knowledge, skills & develops attitude towards learning & contributing in vocational training ecosystem.

This course also enables the instructors to develop instructional skills for mentoring the trainees, engaging all trainees in learning process and managing effective utilization of resources. It emphasizes on the importance of collaborative learning & innovative ways of doing things. All trainees will be able to understand and interpret the course content in right perspective, so that they are engaged in & empowered by their learning experiences and above all, ensure quality delivery.

2. TRAINING SYSTEM

2.1 GENERAL

CITS courses are delivered in National Skill Training Institutes (NSTIs) & DGT affiliated institutes viz., Institutes for Training of Trainers (IToT). For detailed guidelines regarding admission on CITS, instructions issued by DGT from time to time are to be observed. Further complete admission details are made available on NIMI web portal <http://www.nimionlineadmission.in>. The course is of one-year duration. It consists of Trade Technology (Professional skills and Professional knowledge), Training Methodology and Engineering Technology/ Soft skills. After successful completion of the training programme, the trainees appear in All India Trade Test for Craft Instructor. The successful trainee is awarded NCIC certificate by DGT.

2.2 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one year:

S No.	Course Element	Notional Training Hours
1.	Trade Technology	
	Professional Skill (Trade Practical)	640
	Professional Knowledge (Trade Theory)	240
2.	Engineering Technology	
	Workshop Calculation & Science	80
	Engineering Drawing	120
3.	Training Methodology	
	TM Practical	320
	TM Theory	200
	Total	1600

2.3 PROGRESSION PATHWAYS

- Can join as a Technical Instructor in vocational training Institute/ technical Institute.
- Can join as a supervisor in Industries.

2.4 ASSESSMENT & CERTIFICATION

The CITS trainee will be assessed for his/her Instructional skills, knowledge and attitude towards learning throughout the course span and also at the end of the training program.

a) The Continuous Assessment (Internal) during the period of training will be done by **Formative Assessment Method** to test competency of instructor with respect to assessment criteria set against each learning outcomes. The training institute has to maintain an individual trainee portfolio in line with assessment guidelines. 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 National Craft Instructor Certificate will be conducted by DGT as per the guidelines of DGT. The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The external 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 CRITERIA

Allotment of Marks among the subjects for Examination:

Sl. No.	Subject		Marks	Internal Assessment	Full Marks	Pass Marks	
						Exam	Internal Assessment
1.	Trade Technology	Trade Theory	100	40	140	40	24
2.		Trade Practical	200	60	260	120	36
3.	Engineering Technology	Workshop Cal. & Sc.	50	25	75	20	15
4.		Engineering Drawing	50	25	75	20	15
5.	Training Methodology	TM Practical	200	30	230	120	18
6.		TM Theory	100	20	120	40	12
Total Marks			700	200	900	360	120

The minimum pass percent for Trade Practical, TM practical Examinations and Formative assessment is 60% & for all other subjects is 40%. 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. While assessing, the major factors to be considered are approaches to generate solutions to specific problems by involving standard/non-standard practices.

Due consideration should also 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 of the following:

- Demonstration of Instructional Skills (Lesson Plan, Demonstration Plan)
- Record book/daily diary
- Assessment Sheet
- Progress chart
- Video Recording
- Attendance and punctuality
- Viva-voce
- Practical work done/Models
- Assignments
- 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 be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of an acceptable standard of crafts instructorship with occasional guidance and engage students by demonstrating good attributes of a trainer.	<ul style="list-style-type: none"> • Demonstration of fairly good skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A fairly good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Occasional support in imparting effective training.
(b) Weightage in the range of 75%-90% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional	<ul style="list-style-type: none"> • Demonstration of good skill to establish

<p>design, implement learning programme and assess learners which demonstrates attainment of a reasonable standard of crafts instructorship with little guidance and engage students by demonstrating good attributes of a trainer.</p>	<p>a rapport with audience, presentation in orderly manner and establish as an expert in the field.</p> <ul style="list-style-type: none"> • Above average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Little support in imparting effective training.
<p>(c) Weightage in the range of more than 90% to be allotted during assessment</p>	
<p>For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a high standard of crafts instructorship with minimal or no support and engage students by demonstrating good attributes of a trainer.</p>	<ul style="list-style-type: none"> • Demonstration of high skill level to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Good engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A high level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Minimal or no support in imparting effective training.

3. GENERAL INFORMATION

Name of the Trade	PAINTING TECHNOLOGY - CITS
Trade Code	DGT/ 4047
NCO – 2015	2356.0100
NSQF Level	Level-6
Duration of Craft Instructor Training	One Year
Unit Strength (No. Of Student)	25
Entry Qualification	<p>Degree in appropriate branch of Chemical Engineering from recognized University.</p> <p style="text-align: center;">OR</p> <p>Three year Diploma in appropriate branch of Chemical Engineering from recognized Board/ Institution.</p> <p style="text-align: center;">OR</p> <p>National Trade Certificate in Painter (General) or related trades.</p> <p style="text-align: center;">OR</p> <p>National Apprenticeship Certificate in Painter (General) or related trades.</p>
Minimum Age	18 years as on first day of academic session.
Space Norms	104 Sq. m
Power Norms	5 KW
Instructor's Qualification for	
1. Painting Technology -CITS Trade	<p>B.Voc/ Degree in appropriate branch of Chemical Engineering from AICTE/UGC recognized University with two years experience in relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma in appropriate branch of Chemical Engineering from AICTE/ recognized Board/ Institution or relevant Advanced Diploma (Vocational) from DGT with five years experience in relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC passed in the Painter (General) with seven years experience in relevant field.</p> <p><u>Essential Qualification:</u> National Craft Instructor Certificate (NCIC) in Painting Technology trade, in any of the variants under DGT.</p>

<p>2. Workshop Calculation & Science</p>	<p>B.Voc/Degree in any Engineering from AICTE/ UGC recognized Engineering College/ university with two years experience in 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 five years' experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC in any Engineering trade with seven years experience in relevant field.</p> <p><u>Essential Qualification:</u> 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>
<p>3. Engineering Drawing</p>	<p>B.Voc/Degree in Engineering from AICTE/ UGC recognized Engineering College/ university with two years experience in 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 five years' experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC in any one of the 'Electrical group (Gr-II) trades categorized under Engg. Drawing'/ D'man Mechanical / D'man Civil' with seven years experience.</p> <p><u>Essential Qualification:</u> National Craft Instructor Certificate (NCIC) in relevant trade</p> <p style="text-align: center;">OR</p> <p>NCIC in RoDA / D'man (Mech /civil) or any of its variants under DGT.</p>
<p>4. Training Methodology</p>	<p>B.Voc/Degree in any discipline from AICTE/ UGC recognized College/ university with two years experience in training/ teaching field.</p> <p style="text-align: center;">OR</p> <p>Diploma in any discipline from recognized board / University with five years experience in training/teaching field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC passed in any trade with seven years experience in training/ teaching field.</p> <p><u>Essential Qualification:</u> National Craft Instructor Certificate (NCIC) in any of the variants under DGT / B.Ed /ToT from NITTTR or equivalent.</p>
<p>5. Minimum Age for Instructor's</p>	<p>21 Years</p>

Distribution of training on Hourly basis: (Indicative only)						
Total Hrs /week	Trade Practical	Trade Theory	Workshop Cal. & Sc.	Engg. Drawing	TM Practical	TM Theory
40 Hours	16 Hours	6Hours	2 Hours	3 Hours	8 Hours	5 Hours

4. JOB ROLE

Brief description of job roles:

Manual Training Teacher/Craft Instructor; instructs students in ITIs/Vocational Training Institutes in respective trades as per defined job role. Imparts theoretical instructions for the use of tools & equipments of related trades and related subjects. Demonstrate process and operations related to the trade in the workshop; supervises, assesses and evaluates students in their practical work. Ensures availability & proper functioning of equipment and tools in stores.

Painter, General; applies decorative or protective coats of paint, varnish, shellac, enamel, lacquer or other materials on exterior or interior surfaces, trimming and fixtures of glass, metal, wood, plaster concrete brick, building boards or other objects using brush, spray gun, roller, stencils etc. Receives work order and selects correct type of paint materials with the consideration to suitability, durability, ease of application and estimated cost. Mixes pigments, oils and other ingredients to material where required by manual or mechanical mixing device using paddle or electric mixer to obtain desired colour, shade and consistency. Removes dirt, grease or rough spots and irregularities by scrapers, chemicals and abrasives and patches cracks and holes with putty or other filler. Covers surface with appropriate prime coat or sealer to have suitable surface or base for paint. Brushes, sprays or stencils one or more coats of material on surfaces. May finish or decorate surfaces by gilding, silvering or painting over stencils. May be designated according to object coated or material used. May mix paint with linseed oil, colouring matter of materials, labour, etc. May erect scaffolds to facilitate work.

Reference NCO-2015:

- a) 2356.0100 - Manual Training Teacher/Craft Instructor
- b) 7132.0100 – Painter, General

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 TRADE TECHNOLOGY

1. Demonstrate different types of sketching viz., free Hand sketching of different objects, designing of different shapes, size, geometrical shapes of different objects following safety precaution.
2. Monitor the ability of free Hand sketching of Human figures, Shading, Use graph & figure enlargement and compose different types of colour shade Expertise in 2D& 3D design.
3. Demonstrate with colour shades different types letters (Devanagari, roman, gothic, Text writing/ lettering) and apply them in appropriate place.
4. Check different types of Operating System and explore the working on DTP, Corel Draw, Photo shop, PageMaker etc.
5. Demonstrate stencils involving different shapes in ornamental design, text, symbols, Sign board, Name plate etc to develop a craft work and artistic work on radium/ vinyl/ thermocol etc.
6. Analyse different types of Plywood, MDF & low-quality wood and make wooden surface used various techniques, decorate, paint& make an attractive article.
7. Monitor internal and external Building painting by using different decorative press.
8. Monitor the process of cleaning and painting on metal surface for preventive coat. and apply pipe line painting with colour code.
9. Check and assemble different pneumatics parts and paint gun for Spray Painting technique. (Spray Gun / hose handling, air & paint pressure controlling,)
10. Monitor the system of spray booths, Oven, cleaning & their maintenance, application of sealant component on metallic joints.
11. Evaluate aspect ratio mixing of paint, hardener & solvent to correct the Viscosity of paint for Spray-painting in Agricultural equipment's, in-Home appliances, Machines, Automotive Bodies etc.
12. Evaluate dents & monitor the recovery of dents from the damaged accidental area and repainting the surface.
13. Demonstrate different types of powder coating and Powder coating technique in appropriate place with finishing of special effects for Modern furniture.
14. Evaluate quality testing for various Paints & Painted films.

6. COURSE CONTENT

SYLLABUS FOR PAINTING TECHNOLOGY - CITS TRADE			
TRADE TECHNOLOGY			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
Professional Skill 48Hrs; Professional Knowledge 18Hrs (3 week)	Demonstrate different types of sketching viz., free Hand sketching of different objects, designing of different shapes, size, geometrical shapes of different objects following safety precaution.	<ol style="list-style-type: none"> 1. Introduction of trade skills and work application. 2. Safety attitude development of the trainee by educating them to use personal protective equipment (PPE) and Material safety data sheet (MSDS). 3. First-aid method and basic training. 4. Hazard and non-hazard identification and avoidance. 5. Use of firefighting equipment, like- extinguishers, sand bucket, water etc. 6. 5S training. 7. Free hands sketching practice of different lines and strokes. 8. Free hands sketching practice of - flowers, leaves, trees birds and animals. 9. Draw geometrical shapes and construct for design. 10. Draw free hand different types of perspective. 	<p>Introduction of the Institution; rules and management (work) Process of an Institution. Introduction of vocational trade, The importance of trade in the industrial Development of the nation Care in Vocational trade.</p> <p>Accident and First-Aid: Cost of Accidents; Causes and effects of an accident; First-Aid in case of internal injuries; fracture; wound and electric shock.</p> <p>Lines- Different types of lines; its uses and specialty. Pencil- Origin of pencil and its introduction. Different types of pencils; uses and its specialty.</p> <p>Colours for drawing and painting: charcoals, oil and dry pestles, water; poster; acrylic; oil colours and reducer medium.</p>
Professional Skill 48 Hrs; Professional Knowledge 18 Hrs (3 week)	Monitor the ability of free Hand sketching of Human figures, Shading, Use graph & figure enlargement and compose different types of colour shade Expertise in	<ol style="list-style-type: none"> 11. Free hand Black & white/ colour pencil shading of human figures (Male, female & children). 12. Graph and figure enlargement with pencil shading. 13. Draw with shading different tools and equipment of trade 14. Draw colour wheel with 	Colours & colour knowledge:

	2D & 3D design.	<p>poster colour.</p> <p>15. Draw & Colour Design in primary, Secondary & Tertiary colours.</p> <p>16. Marking & Out line Drawing 2D& 3D Design.</p> <p>17. Coloring 2D& 3D design in Warm & Cool Colors.</p> <p>18. Make 2D& 3D design & Colour in Contrast colors.</p> <p>19. Make different colour scale in poster colour</p>	<p>Definition of colour; colour blindness; tone, colour shade-primary, secondary, tertiary.</p> <p>Colour wheel, colours & Different types of colour schemes & colour harmony.</p>
		<p>20. Make 2D& 3D Design in different Composition paint in High key, middle key & low key by poster colour.</p> <p>21. Colour mixing & matching Touch up on Damage posters & photographs. (5 hrs.)</p> <p>22. Enlarge & Sketching Cinema Posters.</p> <p>23. Colouring enlarged Cinema Poster.</p>	<p>Brush: Different types of Brushes with shapes & sizes. Use & Care of Brushes.</p> <p>Knife-Uses; different types of Putty knife; Scraper knife; hacking knife; Diamond-glazier; Gilder knife; Shave hook knife; Stencil knife; Chisel knife.</p>
Professional Skill 16Hrs; Professional Knowledge 06Hrs (1 week)	Demonstrate with colour shades different types letters (Devanagari, roman, gothic, Text writing/ lettering) and apply them in appropriate place. .	<p>24. Sketching & coloring gothic, Roman etc. letters in English.</p> <p>25. Sketching & coloring gothic, Roman etc. letters in Mother Language.</p> <p>26. Sketching & colouring Devnagri letters.</p>	<p>Lettering- Description; uses of devnagri, Roman, Gothic; Italic and Text writing. Spacing - Mechanic and Optical spacing.</p>
Professional Skill 80Hrs; Professional Knowledge 30Hrs (5 week)	Check different types of Operating System and explore the working on DTP, Corel Draw, Photo shop, PageMaker etc.	<p>27. Operate & familiarise with computer operating system.</p> <p>28. Operate paint software & draw freehand sketch & use like as colour bucket, eraser, pencil & all tools.</p> <p>29. Draw scenery like realistic in paint software</p> <p>Photoshop:</p>	<p>Standard pipe threads, nominal diameter, wall thickness, schedule number, die & diestock, tubing.</p>

		<p>30. Tool handling in photo shop.</p> <p>31. Make a different layer & create background, artistic text, design, images.</p> <p>32. Import photo image from file & scanner, edit photo image.</p> <p>33. Image adjustment effects. & layer style effects.</p> <p>34. Edit & Save image in PSD, JPEG & other format.</p> <p>35. Export Design, image, photograph from Photoshop to other different format for different software's. & make a print & print file for different printers.</p>	
		<p>Corel Draw :</p> <p>36. Apply select /move /copy /objects, retire skew, size Objects.</p> <p>37. Apply Combine, Shape, weld, trim, Align, Group / Ungroup objects.</p> <p>38. Add text & Format text, create different heading & Sub-heading.</p> <p>39. Draw dimensionally objects, creating special effects for backgrounds & related objects.</p> <p>40. Make a flex design for marketing offers. Convert & Save to CD/DVD/PD for final printing.</p> <p>Page maker:</p> <p>41. Basic features of page maker.</p> <p>42. Working with various tools.</p> <p>43. Working with plattes and various templates.</p> <p>44. working with various graphics, positioning, logo.</p>	<p>Drawing simple geometric objects using Corel Draw Transforming objects, Organizing objects, Working with text, Dimensioning objects Creating special effects.</p>

		<p>45. using coreldraw design in ventura, pagemaker through export.</p> <p>46. changing and modifying designs.</p> <p>47. FlexiSIGN: Use of the software to create and modify signboard.</p>	
Professional Skill 64Hrs; Professional Knowledge 24Hrs (4 week)	Demonstrate stencils involving different shapes in ornamental design, text, symbols, Sign board, Name plate etc to develop a craft work and artistic work on radium/ vinyl/ thermocol etc.	<p>48. Create ornamental designs for stencils, cut it & make a print.</p> <p>49. Draw simple sentence in different lettering, stencil cutting & stencilling.</p>	<p>Stencil -Definition and types of stencils. Uses; Care and cleaning of different types of stencils. Instruments and equipments for stencil.</p>
		<p>50. Make sign board with background painting.</p> <p>51. Make Figure Enlargement for sign board.</p> <p>52. Draw and painting letters & design or logo on Sign Board.</p> <p>53. Paint a name plate on different material (wood/ tin/ acrylic).</p>	<p>Advertisement-Sign Board, Banner, Posters, Hoardings, Wall painting, Name plate, Logo, Symbol, Monogram, Digital Flex Board.</p> <p>Graph Making & Enlargement, Need of graph for Enlargement.</p>
		<p>54. Make a manually ornamental design on radium or vinyl.</p> <p>55. Make a symbol or image design by computer in graphics & cut it with plotter.</p> <p>56. Do "Instruction board" on acrylic sheet and acrylic composite panel with help of multi-layer radium or vinyl.</p> <p>57. Make a lettering/ image/ symbol design for "Instruction board" by computer in graphics, with help of radium or vinyl & cutting it with plotter, pasting on glass/ acrylic/ ACP/sun mica or different sheets.</p> <p>58. Create a design for wall</p>	<p>Different medium paper for plotter cutting. Manual cutting Instruments & their safety/ care/ precautions, proper pasting procedure, pasting techniques, care & precaution.</p>

		<p>decoration by computer in graphics.</p> <p>59. Cutting and engraving in multi colour vinyl/ ACP sheet/Acrylic sheet with laser cutting machine.</p>	
<p>Professional Skill 64 Hrs;</p> <p>Professional Knowledge 24 Hrs (4 week)</p>	<p>Analyse different types of Plywood, MDF & low-quality wood and make wooden surface used various techniques, decorate, paint & make an attractive article.</p>	<p>60. Clean, sanding, knotting, stooping, staining preparation wooden surface properly for polish.</p> <p>61. Make & apply putty for varnishing & polishing.</p> <p>62. Apply polish on prepared wooden surface with cotton rags.</p> <p>63. Clean, sanding, knotting, stooping, staining preparation wooden surface properly for varnish.</p> <p>64. Monitor varnish on prepared wooden surface with brush.</p> <p>65. Prepare wooden article & apply melamine or PU wooden finish with spray.</p> <p>66. Make a wooden top with thick layer of melamine polish.</p>	<p>Polish paper-Types and uses.</p> <p>Putty - Definition, their material types and uses. Method of mixing & its different system of application.</p> <p>Varnish - Definition; types and characteristics of varnish. Process of making of varnish its importance and contains.</p> <p>Polish- Types and uses. Different application methods.</p>
		<p>67. Prepare wooden surface properly for painting.</p> <p>68. Apply wood primer by brush</p> <p>69. Make putty for wood finishing.</p> <p>70. Monitor putty & prepare wooden surface properly.</p> <p>71. Do paint wooden surface properly with brush</p>	<p>Paint- Definition; classification and use.</p> <p>Pigment, Binders, Solvent, oil, dryers; additives.</p> <p>Painting- Definition and importance of painting.</p>
		<p>72. Demonstrate spray painting on different furniture taking all precautions.</p>	<p>Method of wooden surface painting.</p>
<p>Professional Skill 64Hrs;</p>	<p>Monitor internal and external Building</p>	<p>73. Demonstrate ceiling surface for</p>	<p>Types, uses of building (wall) paints. Wall primer- Water</p>

<p>Professional Knowledge 24Hrs (4 week)</p>	<p>painting by using different decorative press.</p>	<p>lime wash.</p> <p>74. Check wall surface for lime wash.</p> <p>75. Monitor POP on wall for lime painting.</p> <p>76. Apply Lime on ceiling & wall with brush properly.</p> <p>77. Check ceiling & wall for distemper painting.</p> <p>78. Make wall putty for distemping.</p> <p>79. Monitor wall putty with finish & Check wall surface.</p> <p>80. Mixing & apply a distemper properly for wall.</p>	<p>base / Oil base, types of putty for wall. Mixing, Preparation process of Lime and Distemper. Other required Equipments- Below lamp, bucket, plum-bob, putty blender, Paint strainer. Types of Trestle, ladder, scaffolding. Floor coating and water proofing of masonry surfaces.</p>
		<p>81. Check ceiling & wall surface with putty & Apply interior emulsion paint. Use roller & brush.</p> <p>82. Check office & work shop interior wall surface with putty, Apply enamel or luster paint.</p>	<p>Colour selection for interior wall painting and use of Paints. Effects; Intention; Purpose of colors. Paint mixing and preparation process. Difference between emulsion paint and Oil paint.</p>
		<p>83. Clean exterior wall aria with cleaning process & water pressure process</p> <p>84. Check exterior wall with white cement for painting.</p> <p>85. Paint the prepared wall by brush with cement paint.</p> <p>86. Check exterior wall with exterior priming for painting.</p> <p>87. Paint the prepared wall by brush with emulsion paint.</p> <p>88. Decorate the projection with dark shade apply special shades of emulsion colour.</p>	<p>Color selection for exterior wall painting and use of Paints. Method of paint mixing and preparation. Paint used for exterior wall painting.</p>
		<p>89. Decorate the wall with design roller/ stamp/ stencil.</p>	<p>Difference between brush painting and Roller painting. Types of Roller and</p>

		<p>90. Check wall & create texture, use different medium, colour & make a different textures.</p> <p>91. Check wall & design wall paper pasting on wall</p> <p>92. Find the defect on wall before painting and remove it.</p> <p>93. Find the defect on wall after painting and remove it.</p>	<p>preparation of texture for wall painting.</p> <p>Wall defects and defects removal process of wall painting.</p> <p>Building Painting estimate & costing.</p>
<p>Professional Skill 64Hrs;</p> <p>Professional Knowledge 24Hrs (4 week)</p>	<p>Monitor the process of cleaning and painting on metal surface for preventive coat and apply pipe line painting with colour code.</p>	<p>94. Paint deferent pipe line with colour code as per ISI.</p> <p>95. Demonstrate knowledge of safety procedures in Industrial pipe line painting (Demo by video & charts).</p> <p>96. Identify colour code wise– Pipe lines, different types of valves.</p>	<p>Intention and effects of pipe line painting, Colour Codes of pipe line painting. ISI colour code.</p>
		<p>97. Scrap the corrode metal surface.</p> <p>98. Clean the metal surface by wire brush or orbital wire brush.</p> <p>99. Burn the old paint from metal surface by blow lamp or gas flame.</p> <p>100. Do dry sanding with help of emery paper/cloth</p> <p>101. Clean the metal surface by Sander machine.</p> <p>102. Level different metal surface by portable hand grinder.</p>	<p>Corrosion- Definition and classification. Reasons for rusting and effect of climate. Different anti-rusting process.</p>
		<p>103. Monitor degreasing process on metal surface.</p> <p>104. Monitor de-rusting or pickling process on corrode metal.</p> <p>105. Treated phosphating on metal surface with all pre-treatment process.</p>	<p>Metal surface - types and selection of sanding paper (polish paper). Metal surface cleaning- Mechanical and chemical cleaning. (Dry/ wet Sanding, scraping, wire brushing, orbital wire</p>

		<p>106. Demonstrate practical of Different types of, Industrial Pt system by video.</p> <p>107. Make a proper thin metal primer for brush application.</p> <p>108. Check metal surface & apply ready primer on metal surface by brush.</p> <p>109. Monitor enamel / polyester putty or filler on primed surface.</p> <p>110. Monitor enamel paint on primed metal surface.</p> <p>111. Check and paint metallic article by brush.</p> <p>112. Demonstrate colour making for deep painting.</p> <p>113. Demonstrate article for deep painting.</p> <p>114. Demonstrate practical of Electro coat Deeping process & conveyor system by video.</p>	<p>brushing, paint burning, sand and shot- blasting, pickling and phosphating).</p> <p>Metal Primer - Types, Purpose, application and use. Types of surface. Types of solvent or reducers / thinner/ automotive paints (Enamel, NC, Stoving, PU, Epoxy, rubber base sound deadener paint, metallic, pearl, water base automotive paint), lacquer.</p> <p>Types of painting process- Traditional and modern technology. Ex.- Brushing, Deeping, barreling, Aerosol, roller coating, suction spray, vertical spray, pressure vessel, spray airless, electrostatic, powder coating etc.</p>
<p>Professional Skill 32Hrs;</p> <p>Professional Knowledge 12Hrs (2 week)</p>	<p>Check and assemble different pneumatics parts and paint gun for Spray Painting technique. (Spray Gun / hose handling, air & paint pressure controlling,)</p>	<p>115. Identify pneumatic components – Compressor, pressure gauge, Filter-Regulator-Lubricator (FRL) unit, and Different types of valves and actuators.</p> <p>116. Demonstrate knowledge of safety procedures in spray systems and personal Protective Equipment (PPE) (orally & video).</p> <p>117. Maintenance, troubleshooting, and safety aspects of pneumatic and Painting instruments (The practical for this component may be demonstrated by video)</p> <p>118. Knowledge & Inspect spray</p>	<p>Spray Gun - Principles of spray painting, spray gun accessories and their function different types of spray guns. Holding of spray gun and stroke adjustment. Types of spray painting method.</p> <p>Air compressor for Painting Process. Required instruments for spray painting.</p> <p>Description of spray painting</p>

		<p>gun holding and stroke adjustment, Paint adjustment, air adjustment techniques.</p> <p>119. Spraying practice on the surface like as edges, corner, square, round & curved area.</p>	<p>plant. Types of booth, description of booth, care and maintenance of spray booth.</p>
<p>Professional Skill 16Hrs; Professional Knowledge 06Hrs (1 week)</p>	<p>Monitor the system of spray booths, Oven, cleaning & their maintenance, application of sealant component on metallic joints.</p>	<p>120. Operate, maintenance, troubleshooting, and safety aspects of paint spray booth.</p> <p>121. Operate, and safety aspects of Oven Setting, temperature & timing.</p> <p>122. Monitor sealant on metallic joints.</p>	<p>Types of oven for painting. Description of oven and its care.</p> <p>Sealant - Definition and description. Purpose of sealant application - edge protection; prevention of water leakage. (Hiding the metal joint/clinch).</p>
<p>Professional Skill 64 Hrs; Professional Knowledge 24 Hrs (4 week)</p>	<p>Evaluate aspect ratio mixing of paint, hardener & solvent to correct the Viscosity of paint for Spray-painting in Agricultural equipment's, in-Home appliances, Machines, Automotive Bodies etc.</p>	<p>123. Paint preparation & mixing for spray painting.</p> <p>124. Practice to Measure the viscosity of paint.</p> <p>125. Spray Painting practice on ornamental objects, with deferent types of paints.</p> <p>126. Spraying metallic primer on metal surface.</p> <p>127. Monitor Car patch, Putty, Filler on metallic surface & prepare it.</p> <p>128. Spraying Surfacer on primed or putty finish surface.</p> <p>129. Spraying finish Top Coat on prepared job.</p> <p>* Use enamel/ N.C./Metalic paints. (Or latest paints.)</p> <p>130. Demonstrate the surface of home appliances (ex- fan, cooler, fridge, washing machine etc.).</p>	<p>Paint viscosity - importance, method of the paint viscosity.</p> <p>Paint preparation & mixing for different application.</p> <p>Introduction and uses of Pressure feed.</p> <p>Protective and marine paintin0067</p> <p>Airless and Electrostatic Spray painting.</p>

		<p>131. Priming & surfacing on home appliances. (09 hrs.)</p> <p>132. Demonstrate finish undercoat & top coat on home appliances.</p> <p>* Use enamel/ N.C./ P.U. paints-Solid/ Metallic/ Pearl/.</p>	
		<p>133. Priming & surfacing on machine.</p> <p>134. Demonstrate finish undercoat & top coat on machine.</p> <p>* Use Enamel/ Epoxy/N.C./ P.U. /paints. (Or latest paints.)</p>	<p>Process of article and machine painting.</p>
		<p>135. Demonstrate the Tow wheeler body and spares surface.</p> <p>136. Priming & surfacing the Tow wheeler body and spares surface.</p> <p>137. Demonstrate finish undercoat & top coat on Tow wheeler body and spares surface. Demonstrate Graphic sticker on painted surface properly & apply lacquer coat evenly. Use Enamel/ N.C./ P.U. paints/- Solid/ Metallic. (Or latest paints.)</p> <p>138. Identify the parts of Electrostatic gun assembly & operate it carefully.</p> <p>139. Identify the parts of Airless gun assembly & operate it carefully.</p> <p>140. Demonstrate practical of Different types of Spray painting, Industrial Painting system by video.</p>	<p>Car: Process of repainting. (Removal of dent, car patch, putty process, metal primer, surface, paint) Spray painting.</p> <p>Types of paint defects & its remedies. Importance of polishing, removal defects by polishing.</p>
<p>Professional Skill 48 Hrs;</p>	<p>Evaluate dents & monitor the recovery of dents</p>	<p>141. Disassemble essential damage parts, inspect & mark denting area. Choose & decide process</p>	<p>Removal of defects by polishing. Removal dented area on the different surface,</p>

<p>Professional Knowledge 18 Hrs (3 week)</p>	<p>from the damaged accidental area and repainting the surface.</p>	<p>tools for denting. 142. Removed dent on marked area, apply essential method. 143. Do sanding or burn on denting area & apply primer & surface. Apply putty layer on necessary area evenly. 144. Use wet sanding, level denting surface area, apply thin coat of surface. 145. Masking on unwanted area properly. 146. Match the shade Overlay proper equally on unmask area. 147. Unmasked the mask area carefully & checkout properly & touch-up it by necessary process. 148. Demonstrate final coat rub and wax properly & matched it.</p>	<p>types of denting process.</p>
		<p>149. Demonstrate knowledge of Paint defects & its remedies. (video). 150. Check & Find out different paint defects (run down, sagging, pin hole, orange peel, oil & water spot, over/dry spray, uncover shade variation etc.). 151. Mark the defected area, Decide Techniques & apply remedies properly. Make finished surface.</p>	<p>Types of paint defects & its remedies. Importance of polishing, removal defects by polishing.</p>
<p>Professional Skill 16 Hrs; Professional Knowledge 06 Hrs</p>	<p>Demonstrate different types of powder coating and Powder coating technique in appropriate place</p>	<p>152. Process Finish special effects on different furniture & different surface. (like as-colour gradations, malty tones applying, different textures, etc.).</p>	<p>Furniture making is a multiple skills, using different applications on one object like Painting, Polishing, Varnishing, Waxing, staining, PU coating textures creating</p>

(1 week)	with finishing of special effects for Modern furniture.	<p>153. Check & Clean the metallic article in chemical (degreasing, de-rusting, activation, phosphating, passivation & water rinsing as required etc.)</p> <p>154. Proceed powder coating on cleaned article & bake it in oven in appropriate temperature & timing.</p>	<p>etc.</p> <p>Operating system of Powder coating technique. Chemical cleaning process, Types of coating powders.</p>
Professional Skill 16Hrs; Professional Knowledge 06Hrs (1 week)	Evaluate quality testing for various Paints & Painted films.	<p>155. Demonstrate knowledge of Paint defects & its remedies. (video).</p> <p>156. Test the quality of paints & Painted surfaces by various method & instruments.</p>	Different types of paints & painted surface testing equipments, Types of testing methods.

SYLLABUS FOR CORE SKILLS	
1.	Workshop Calculation & Science (Common for all Engineering CITS trades) (80 Hrs)
2.	Engineering Drawing (Group II) (120 Hrs)
3.	Training Methodology (Common for all CITS trades) (320 Hrs + 200 Hrs)

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

7. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Demonstrate different types of sketching viz., free Hand sketching of different objects, designing of different shapes, size, geometrical shapes of different objects following safety precaution.	Make a practice of different lines and strokes, nature forms like- flowers, leaves, trees, birds and animals
	Explain most useful for improving hand force and object proportion optically by free hands sketching practice.
	Explain importance of graphics & perspective.
	Draw geometrical shapes and construct for design.
	Draw free hand geometrical forms in perspective.
2. Monitor the ability of free Hand sketching of Human figures, Shading, Use graph & figure enlargement and compose different types of colour shade Expertise in 2D & 3D design.	Draw free hands sketching practice of human figures.
	Test & verify types of pencils.
	Develop the anatomy of human figures (Male, female & children)
	Draw black & white/ colour pencil shading of human figures
	Make with graph and figure enlargement with pencil.
	Find and rectify trade tools and equipments and draw with shading.
	Marking & Out line Drawing 2D Design.
	Colouring 2D design in Warm & Cool Colour.
3. Demonstrate with colour shades different types letters (Devanagari, roman, gothic, Text writing/ lettering) and apply them in appropriate place.	Sketching & colouring gothic letters in English.
	Sketching & colouring gothic letters in Mother Language.
	Sketching & colouring Roman letters.
	Do free hand Strokes for Devanagari.
	Sketching & colouring Devanagari letters.
4. Check different types of Operating System and explore the working on DTP, Corel Draw, Photo shop, PageMaker etc.	Operate & familiarize with computer operating system.
	Operate paint software & draw freehand sketch & practice on color bucket, eraser, pencil & all tools.
	Draw scenery like realistic in paint software
	Tool handling in photo shop familiarise with all hand tools.

	<p>Make a different layer & create background, artistic text, design, images.</p> <p>Demonstrate import photo image from file & scanner, edit photo images.</p> <p>Edit Image adjustment effects. & layer style effects.</p> <p>Edit special effect on different layer, colours, textures, filter effects.</p> <p>Edit & Save image in PSD, JPEG & other format.</p> <p>Create a colour advertise design for festival offer</p> <p>Develop export Design, image, photograph from Photoshop to other different format for different software's. & make a print & print file for different printers.</p> <p>Tool handling in Corel draw familiarise with all hand tools Demonstrate select /move /copy /objects, retire skew, size Objects.</p> <p>Demonstrate combine, shape, weld, trim, align, Group / Ungroup objects.</p> <p>Practice on add text & Format text create different heading & Sub-heading.</p> <p>Draw dimensionally objects. Creating special effects for backgrounds & related objects.</p> <p>Do graphical effects to tex.Creating symbols, logo, special effects.</p> <p>Tool handling in Page maker familiarise with all hand tools Demonstrate select /move /copy /objects, retire skew, size Objects.</p> <p>Make a flex design for marketing offers. Convert & Save to CD/ DVD/ PD for final printing.</p>
5. Demonstrate stencils involving different shapes in ornamental design, text, symbols, Sign board, Name plate etc to develop a craft work and artistic work on radium/ vinyl/ thermocol etc.	<p>Create ornamental designs for stencils.</p> <p>Cut the stencils & make a print.</p> <p>Draw simple sentence in different lettering stencil.</p> <p>Cutting & stencilling the letters.</p>
6. Analyse different types of Plywood, MDF & low-	Demonstrate Cleaning, sanding, knotting, stooping, staining preparation on wooden surface properly for polish.

<p>quality wood and make wooden surface used various techniques, decorate, paint& make an attractive article.</p>	Make & apply putty for varnishing & polishing.
	Apply polish on prepared wooden surface with cotton rags.
	Demonstrate Cleaning, sanding, knotting, stooping, staining preparation wooden surface properly for varnish.
	Demonstrate varnish on prepared wooden surface with brush.
	Check wooden article & apply varnish with spray.
	Check wooden article & apply melamine or PU wooden finish with spray.
	Make a wooden top with thick layer of melamine polish.
	Check wooden surface properly for painting.
	Demonstrate wood primer by brush.
	Make a putty for wood finishing.
	Demonstrate putty & prepare wooden surface properly.
	Do paint wooden surface properly with brush
	Check & demonstrate spray painting on different furniture take the all precautions.
<p>7. Monitor internal and external Building painting by using different decorative press.</p>	Check ceiling & Wall surface for lime wash. (Sanding & Cleaning)
	Apply POP on wall.
	Make & mixing of lime & Steiner.
	Apply Lime on ceiling & wall with brush properly.
	Check ceiling & wall for distemper painting.
	Make wall putty for distempering.
	Apply wall putty with finish & prepare wall surface.
	Mixing & apply a distemper properly for wall.
	Check ceiling & wall surface with putty & Apply interior emulsion paint. Use roller & brush.
	Monitor interior wall surface with putty, Apply enamel or luster paint.
	Making process of scaffolding for exterior wall painting.
	Clean exterior wall area with cleaning process & water pressure process.
	Monitor exterior wall with white cement for painting.
	Paint the prepared wall by brush with cement paint.
	Monitor exterior wall with exterior priming for painting.
Paint the prepared wall by brush with emulsion paint.	
Decorate the projection with dark shade apply special shades of emulsion colour.	
Monitor wall & design wall paper pasting on wall.	

	Find the defects on wall before painting and remove it.
	Find the defects on wall after painting and remove it.
8. Monitor the process of cleaning and painting on metal surface for preventive coat. and apply pipe line painting with colour code.	Do Scrap on corrode metal surface.
	Cleaning process of metal surface by wire brush or orbital wire brush.
	Apply burn process on old paint from metal surface by blow lamp or gas flame.
	Apply dry sanding with help of emery paper/cloth.
	Apply wet sanding on old painted object.
	Clean the metal surface by Sander machine.
	Do level the different metal surface by portable hand grinder.
	Cleaning, Sanding, or wire brushing & paint by brush windows, grill, doors, safety doors, gate etc.
	Monitor Paint & painting on ceiling and wall. use dip-feed roller / pad or airless spray.
	Do Paint different pipe line with colour code as per ISI.
	Identify colour code wise– Pipe lines, different types of valves.
9. Check and assemble different pneumatics parts and paint gun for Spray Painting technique. (Spray Gun / hose handling, air & paint pressure controlling,)	Monitor metal surface & apply ready primer on metal surface by brush.
	Apply enamel/ polyester putty or filler on primed surface.
	Apply enamel paint on primed metal surface by brush.
	Monitor and paint metallic article by brush.
	Monitor & colour making for deep painting.
	Demonstrate article for deep painting. (Cleaning, rubbing, sanding.)
	Explain the Electro coat Deeping process & conveyor system with all safety.
	Identify pneumatic components – Compressor, pressure gauge, Filter, Regulator, and Lubricator. Different types of valves.
	Explain the safety procedures in spray systems and personal Protective Equipment (PPE).
	Maintenance, troubleshooting, and safety aspects of pneumatic and Painting instruments.
10. Monitor the system of spray booths, Oven, cleaning & their maintenance, application	Use and apply of paint spray booth& maintenance, troubleshooting, safety aspects.
	Use & Operation of Oven Setting, temperature & timing.
	Apply sealant on metallic joints.

<p>of sealant component on metallic joints.</p>	
<p>11. Evaluate aspect ratio mixing of paint, hardener & solvent to correct the Viscosity of paint for Spray-painting in Agricultural equipment's, in-Home appliances, Machines, Automotive Bodies etc.</p>	<p>Preparation of Paint mixing for spray painting.</p> <p>Measure the viscosity of paint.</p> <p>Spray Painting on ornamental objects, with deferent types of paints.</p> <p>Spraying metallic primer on metal surface.</p> <p>Apply Car patch, Putty and Filler on metallic surface & preparation.</p> <p>Apply Surfacer on primed or putty finish surface.</p> <p>Preparation of the two wheeler body and spares surface.</p> <p>Priming & surfacing the Two wheeler body and spares surface.</p> <p>Apply finish undercoat & top coat on two wheeler body and spares surface. Use Automotive paints.</p> <p>Apply Graphic sticker on painted surface properly & apply lacquer coat evenly.</p> <p>Spraying finish application for Top Coat. Use of enamel/ N.C. paints. (Or latest paints.)</p> <p>Identify the parts of Electrostatic gun assembly & operate it carefully.</p> <p>Identify the parts of Airless gun assembly & Operate it carefully.</p> <p>Demonstrate different types of Spray painting.</p>
<p>12. Evaluate dents & monitor the recovery of dents from the damaged accidental area and repainting the surface.</p>	<p>Disassemble essential damage parts, inspect & mark denting area. Choose & decide process tools for denting.</p> <p>Removed dent on marked area, apply essential method.</p> <p>Do sanding or burn on denting area & apply primer & surface. Apply putty layer on spotted area evenly.</p> <p>Use wet sanding, level denting surface area, procedure of thin coat of Surfacer.</p> <p>Masking process on unwanted area properly.</p> <p>Match the shade Overlay proper equally on unmask area.</p> <p>Unmasked the mask area carefully & checkout properly & touch-up it by necessary process.</p> <p>Apply final coat rubbing and waxing process properly.</p> <p>Demonstrate of Paint defects & its remedies.</p> <p>Check & Find out different paint defects (run down, sagging, pin hole, orange peel, oil & water spot, over/ dry spray, uncover, shade variation etc.)</p>

	Mark the defected area, Decide Techniques & apply remedies properly. Make Finished surface.
13. Demonstrate different types of powder coating and Powder coating technique in appropriate place with finishing of special effects for Modern furniture.	Pretreatment& Clean the metallic article in chemical (degreasing, de-rusting, activation, phosphating, passivation & water rinsing as where required etc.)
	Apply procedure of powder coating on cleaned article & baking in oven with appropriate temperature & timing.
	Apply Process of Finish special effects on different furniture & different surface. (like as- colour gradations, multi tones applying, different textures, etc.)
14. Evaluate quality testing for various Paints & Painted films.	Check and identify the Paint defects & its remedies.
	Test the quality of paints & Painted surfaces by various testing method & instruments.

8. INFRASTRUCTURE

LIST OF TOOLS AND EQUIPMENT FOR PAINTING TECHNOLOGY - CITS TRADE			
For batch of 25 candidates			
S No.	Name of the Tool & Equipment	Specification	Quantity
A. TRAINEES TOOL KIT			
1.	Rule steel	24" (600 mm.)	25+1 Nos.
2.	Drawing Board	Imperial size	25+1 Nos.
3.	Rule wooden (Consumable)	24" (600 mm.)	25+1 Nos.
4.	Brush Round Short Hair- (Consumable)	0 to 12 No.	25+1 Nos.
5.	Brush Flat Short Hair - (Consumable)	0 to 12 No.	25+1 Nos.
6.	Varnish Brush soft hair- (Consumable)	25mm, 50mm, 75mm, 100mm	25+1 Nos.
7.	Colour Pallet for water colour (Consumable)	Big size	25+1 Nos.
8.	Stencil/ Paper Cutter (Consumable)	medium size	25+1 Nos.
B. SHOP TOOLS, INSTRUMENTS			
Lists of Tools and Equipments:			
9.	T' Square	Imperial size	2 Nos.
10.	Easel 'a' Type stand		2 Nos.
11.	Square Blade	150 mm	1 No.
12.	Hacking Knife		1 No.
13.	Palate Knife Set		5 sets
14.	Paint Tin Opener		2 Nos.
15.	Scraper Knife		5 Nos.
16.	Glider Knife		5 Nos.
17.	Pliers Insulated		1 No.
18.	Paint Burner (Acetylene Gas)		1 Set
19.	Blow Lamp		2 Nos.
20.	Screw Driver	100mm / 200mm	2 each
21.	Step Ladder (Aluminum)	6 feet	2 No.
22.	working Bench	240 cm X 120 cm X 75 cm	1 No.
23.	Weight Per Litter Cup	100 ml capacity	1 No.
24.	Ford Cop for Viscosity Measurement with stand	No.3 & No.4	2 each
25.	Sink (Stainless steel)	H 250mm x W 450mm x L 600mm.	4 Nos.
26.	Fire Extinguisher		2 Nos.
27.	Fire Buckets with stand (4 in 1)		1 set
28.	Suction feed spray gun with accessories.	1 Ltr. Capacity of cup	2 Nos.
29.	Portable Electric Hand Grinder		1 No.

30.	Gloss Meter		1 No.
31.	Infra red lamp		2 Nos.
32.	Digital DFT meter		2 Nos.
33.	Orbital Sander Machine with dust collector		5 Nos.
34.	Aerograph (Air Brush/ Pen Gun)		1 No.
35.	Pneumatic Polishing Machine with Pads		5 Nos.
36.	Goggles (Consumable)		5 Nos.
37.	Face Mask & Respirator (Consumable)		5 Nos.
38.	Gloves (Rubber) (Consumable)		5 Nos.
39.	Gun Spray with Gravity Feed Cup with Complete accessories	With Complete accessories (Capacity- ¼ ltr. , 1/2 ltr. , 1/3 ltr. , 1 ltr.)	2 Nos. each
40.	Conventional Spray Gun For Pressure Feed	with Complete accessories	2 Nos.
41.	Electric spray gun	with Complete accessories	1 No.
42.	Comb Gauge		2 Nos.
43.	Pencil Hardness Tester		2 Nos.
44.	Digital Weight Machine	Capacity 5 kg. weighing scale	1 No.
45.	Laser cutting machine with stand complete accessories 24"		1 No.
C. GENERAL INSTALLATION			
46.	Air Compressor	3 Phase, 2 HP	1 No.
47.	Air Compressor	single Phase, 1 HP	1 No.
48.	Pressure Feed Container with Conventional	20 ltr. Capacity with Complete accessories	1 set
49.	Electrostatic spray Gun unit	with complete accessories	1 set
50.	Airless Spray Gun unit	with complete accessories	1 set
51.	Sealer Drum Press Pump with Sealer Gun Assembly	with complete accessories	1 set
52.	Side Draught Dry Paint Booth- Overall Dimensions (mm):	1580(W) x 2250(D) x 3200(H); Working Dimensions (mm): 1500(W) x 1320(D) x 2040(H)	1 No.
53.	Power Coating set up with Gun booth & Oven		1 Unit

D. Shop Floor Furniture and Materials			
54.	Stool		25 Nos.
55.	Desk with Locker		25 Nos.
56.	Metal Shelving Rack Open Type	1800 x 900 x 500 mm with 4 Adjustable Shelves	2 Nos.
57.	Steel Locker's with 8 Drawer's	One locker for each trainee	3 Nos.
58.	Green Glass Board	6'X4'	1 No.
59.	Cupboard		4 Nos.
60.	Instructor table and		1 No.
61.	Instructor chair		2 Nos.
E. Designing Lab			
62.	Computers with Accessories	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.	10 sets
63.	Computer Table		10 nos.
64.	Students Chair		20 nos.
65.	Anti Virus (Latest Version)		7 Nos.
66.	Scanner High Resolution		1 No.
67.	Printer Lager/colour		1 No.
68.	Software Card Draw / Page Make/ Photo Shop / Shree Lippi / ISM / Acee - Dcee Viewer (Latest Version)		1 Each (Multi installer)
69.	UPS		As required

70.	Camera Digital	Higher megapixel with Tri - Pod	1 No.
71.	Radium Plotter and cutter with stand	complete accessories 48"	1 No.

Note:

Internet facility is desired to be provided in the class room.

ANNEXURE – I

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts 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 contributed/ participated for finalizing the course curriculum of CITS Painting Technology trade			
S No.	Name & Designation Sh/Mr/Ms	Organization	Remarks
1.	C. S. Murthy, JDT	CSTARI, Kolkata	Chairman
2.	S.P.Bhattacharjee, Joint Director	NSTI Mumbai, STCC Convener	Member
3.	R. R. Patel, Regional Deputy Director	DET, Gujarat	Member
4.	N. K. Shah, Principal	Govt. ITI Tarsali	Member
5.	Ketan Patel, DDT	RDSDE, Gandhinagar, Gujarat	Member
6.	Bharat Makhwana, Supervisor Instructor	PASS Pvt. ITI, Umreth	Member
7.	K. K. Merai, Principal	Govt. ITI Gorwa	Member
8.	D. J. Varmora, Principal	Govt. ITI Padra	Member
9.	N. H. Patel, Supervisor Instructor	Govt. ITI Tarsali	Member
10.	S. M. Patel	Govt. ITI Tarsali	Member
11.	Danish Aggarwal, ADT	RDSDE, Gandhinagar, Gujarat	Member
12.	D. A. Jadeja, Supervisor Instructor	Govt. ITI Tarsali	Member
13.	A.B . Suther, Supervisor Instructor	Govt. ITI Saraspur	Member
14.	S.S. Shirat, Supervisor Instructor	Govt. ITI Tarsali	Member
15.	Jitendra Pawar, Guest Lecturer	Govt. ITI Tarsali	Member
16.	M.D Nayak, Principal	Govt. ITI Dabhoi	Member
	Kapil Nayak, BDO	Berger Paints	Member
17.	S.K. Jadhav, Supervisor Instructor	Govt. ITI Majuragate, Surat	Member
18.	S. Bandyopadhyay, Training Officer	CSTARI, Kolkata	Member
19.	Bharat K. Nigam, Training Officer	CSTARI, Kolkata	Member