

Revised Engineering Drawing (ED) syllabus
of
40 Hrs duration for 75 trades in 29 groups
under Craftsmen Training Scheme (CTS)
applicable from 2021-22 session.

Please note that free hand Engineering Drawing will be assessed as part of Formative assessment while, a few MCQ question on ED will be part of Trade Theory Computer Based Test (CBT).

Also note that for Draughtsman groups of trade, ED will be part of trade practical exam. Changes in their syllabus, if any, will be communicated Separately.

Revised Engineering Drawing (ED) curriculum for 1-year engineering group of trades offered under Craftsmen Training Scheme

Group 1 - Engineering Drawing

CTS Trades Covered: Artisan Using Advanced Tool, Industrial Robotics & Digital Manufacturing Technician, Manufacturing Process Control and Automation

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trades. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to trades.	8
TOTAL		40 HRS

Group 2 - Engineering Drawing**CTS Trades Covered:** Solar Technician

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke 	4
4.	Dimensioning Practice <ul style="list-style-type: none"> • Types of arrowhead 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different electrical symbols used in the related trade. 	4
6.	Reading of Electrical Circuit Diagram	14
7.	Reading of Electrical Layout drawing	8
TOTAL		40 HRS

Group 3 - Engineering Drawing**CTS Trades Covered:** Domestic Painter, Industrial Painter, Mechanic Auto Body Painting

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	8
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke, double stroke, inclined 	12
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead 	10
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trade. 	8
TOTAL		40 HRS

Group 4 - Engineering Drawing

CTS Trades Covered: Welder, Welder (Fabrication & Fitting) , Welder (GMAW & GTAW), Welder (Pipe), Welder (Structural), Welder (Welding & Inspection)

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	4
3.	Lines -Types and applications in drawing	2
4.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke, double stroke, inclined 	4
5.	Reading of dimension and Dimensioning Practice.	4
6.	Reading of fabrication drawing, sectional view of different types of welding Joints. Sectional view of different pipe joints	10
7.	Symbolic representation – different symbols used in the related trades	4
8.	Reading of Job Drawing of related trades.	10
	Total	40

Group 5 - Engineering Drawing**CTS Trades Covered:** Marine Engine Fitter

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Rhombus, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Marine Engine Fitter trade. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to Marine Engine Fitter trade.	8
Total		40

Group 6 - Engineering Drawing**CTS Trades Covered:** Pump operator cum Mechanic

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Rhombus, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Reading of dimension and Dimensioning Practice.	4
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Pump operator cum Mechanic trade. 	10
6.	Reading of Job drawing and piping Layout	14
Total		40

Group 7 - Engineering Drawing**CTS Trades Covered: Foundryman**

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	10
4.	<ul style="list-style-type: none"> • Reading of dimension and Dimensioning Practice. 	4
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Foundryman trade. 	8
6.	<ul style="list-style-type: none"> • Basic of Orthographic and Isometric projections • Reading of Job drawing related to Foundryman trade. 	10
Total		40

Group 8 - Engineering Drawing**CTS Trades Covered: Mechanic Lens/Prism Grinding**

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram, Ellipse & Parabola. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Mechanic Lens/Prism grinding trade. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to Mechanic Lens/Prism grinding trade.	8
Total		40

Group 9 - Engineering Drawing**CTS Trades Covered:** Sheet Metal

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of - <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram, Ellipse & Parabola. • Lettering & Numbering – Single Stroke. • Development of Surfaces 	8
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Sheet Metal trade. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	10
7.	Reading of Job drawing related to Sheet Metal trade.	8
Total		40

Group 10 - Engineering Drawing**CTS Trades Covered:** Plastic Processing Operator

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Plastic Processing Operator trade. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to Plastic Processing Operator trade.	8
Total		40

Group 11 - Engineering Drawing**CTS Trades Covered: Carpenter**

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	<ul style="list-style-type: none"> • Reading of dimension and Dimensioning Practice. 	2
5.	<ul style="list-style-type: none"> • Different joints used in the carpenter trade. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to carpenter trade.	8
Total		40

Group 12 - Engineering Drawing**CTS Trades Covered: Mason**

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. 	8
4.	<ul style="list-style-type: none"> • Reading of dimension and Dimensioning Practice. 	4
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the trades. 	8
6.	Reading of Plan drawing	12
Total		40

Group 13 - Engineering Drawing**CTS Trades Covered:** Plumber

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. 	8
4.	<ul style="list-style-type: none"> • Reading of dimension and Dimensioning Practice. 	4
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols and Pipe joints used in the trade. 	10
6.	Reading of layout plan drawing in piping	10
Total		40

Group 14 - Engineering Drawing**CTS Trades Covered:** Rubber Technician

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	10
4.	<ul style="list-style-type: none"> • Reading of dimension and Dimensioning Practice. 	4
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Rubber Technician trade. 	8
6.	Reading of Job/ process drawing related to Rubber Technician trade.	10
Total		40

Group 15 - Engineering Drawing**CTS Trades Covered:** Stone Mining Machine Operator, Stone Processing Machine Operator

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Stone Mining / Stone Processing Machine Operator trades. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to Stone Mining / Stone Processing Machine Operator trades.	8
Total		40

Group 16 - Engineering Drawing**CTS Trades Covered:** Warehouse Technician, In Plant Logistics Assistant

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	10
4.	<ul style="list-style-type: none"> • Reading of dimension and Dimensioning Practice. 	4
5.	Symbolic representation – <ul style="list-style-type: none"> • Different packing and labeling materials used in the trades. 	8
6.	Reading of Warehouse layout / Job stacking/ pallet stack drawing plan	10
Total		40

Group 17 - Engineering Drawing

CTS Trades Covered: - Mechanic Auto Body Repair, Mechanic Auto Electrical and Electronics, Mechanic Diesel, Mechanic Tractor, Mechanic Two and Three-wheeler

Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trades of Mechanic Auto Body Repair / Electrical and Electronics / Diesel / Tractor / Two and Three-wheeler. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to Mechanic Auto Body Repair / Electrical and Electronics / Diesel / Tractor / Two and Three-wheeler trades.	8
Total		40

Revised Engineering Drawing (ED) curriculum for 1-year engineering group of trades offered under Craftsmen Training Scheme

Group 18 - Engineering Drawing

CTS Trades Covered: Fitter, Turner, Machinist, Machinist Grinder, Mechanic Machine Tool Maintenance, Operator Advance Machine Tool, TDM (D&M), TDM (J&F), Mechanic Mining Machinery, Technician Mechatronics, Textile Mechatronics, Basic Designer & Virtual Verifier, Advanced CNC machining, Aeronautical Structure & Equipment Fitter

1 st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trades. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing of related trades.	8
Total		40

2nd -Year		
Sl. No.	Topic	Time in hrs.
1.	Reading of drawing of nuts, bolt, screw thread, different types of locking devices e.g., Double nut, Castle nut, Pin, etc.	6
2.	Reading of foundation drawing	6
3.	Reading of Rivets and rivetted joints, welded joints	6
4.	Reading of drawing of pipes and pipe joints	6
5.	Reading of Job Drawing ,Sectional View & Assembly view	16
Total		40

Group 19-Engineering Drawing		
CTS Trades Covered: Electrician, Wireman, Electroplater, Lift & Escalator Mechanic, Electrician Power Distribution		
1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke 	4
4.	Dimensioning Practice <ul style="list-style-type: none"> • Types of arrowhead 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different electrical symbols used in the related trades 	4
6.	Reading of Electrical Circuit Diagram	14
7.	Reading of Electrical Layout drawing	8
Total		40

2nd -Year		
Sl. No.	Topic	Time in hrs.
1.	Reading of Electrical Sign and Symbols	4
2.	Sketches of Electrical components	6
3.	Reading of Electrical wiring diagram and Layout diagram Reading of Electrical earthing diagram. Drawing the schematic diagram of plate and pipe earthing.	10
4.	Drawing of Electrical circuit diagram	10
5.	Drawing of Block diagram of Instruments & equipment of trades	10
Total		40

Group 20 - Engineering Drawing		
CTS Trades Covered: Tech. Medical Electronics, Technician Mechatronics, Technician Power Electronics System, Electronics Mechanic, Mechanic Consumer Electronics Appliances, Tech. Electronic System Design & Repair		
1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke 	4
4.	Symbolic representation – <ul style="list-style-type: none"> • Different Electronic symbols used in the related trades 	4
5.	Reading of Electronic Circuit Diagram	14
6.	Reading of Electronic Layout drawing	10
Total		40

2nd -Year		
Sl. No.	Topic	Time in hrs.
1.	Reading of Electronics Sign and Symbols	4
2.	Sketches of Electronics components	6
3.	Reading of Electronics wiring diagram and Layout diagram	6
4.	Drawing of Electronics circuit diagram	12
5.	Drawing of Block diagram of Instruments & equipment of trades	12
Total		40

Group 21 - Engineering Drawing		
CTS Trades Covered: Instrument Mechanic (Chemical Plant), Attendant Operator (Chemical Plant), Laboratory Attendant (Chemical Plant), Maintenance Mechanic (Chemical Plant)		
1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke 	4
4.	Dimensioning Practice <ul style="list-style-type: none"> • Types of arrowhead 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trades 	4
6.	Reading of chemical plant Circuit Diagram	14
7.	Reading of Chemical plant Layout drawing	8
Total		40

2nd Year Engg. Drawing not required.

Group 22 - Engineering Drawing**CTS Trades Covered:** Spinning Technician, Textile wet processing Technician, Weaving Technician

1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke 	4
4.	Dimensioning Practice <ul style="list-style-type: none"> • Types of arrowhead 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Spinning / Textile wet processing /weaving Technician trades. 	4
6.	Reading of chemical plant Circuit Diagram	14
7.	Reading of Chemical plant Layout drawing	8
Total		40

2nd Year Engg. Drawing not required.

Group 23 - Engineering Drawing

CTS Trades Covered: Information and Communication Technology System Maintenance, Information Technology

1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. 	6
4.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trades 	12
5.	Reading of Network system Diagram & Hardware component	20
Total		40

2nd Year Engg. Drawing not required.

Group 24 - Engineering Drawing

CTS Trades Covered: Mechanic Agricultural Machinery, Mechanic Motor Vehicle, Mechanic Electric Vehicle

1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trades. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing of related trades.	8
Total		40

2nd -Year		
Sl. No.	Topic	Time in hrs.
1.	Reading of Electrical, Electronic & Mechanical Sign and Symbols used in Automobile.	4
2.	Sketches of Electrical, Electronic & Mechanical components used in Automobile.	6
3.	Reading of Electrical wiring diagram and Layout diagram used in Automobile.	10
4.	Drawing of Electrical circuit diagram used in Automobile.	10
5.	Drawing of Block diagram of Instruments & equipment of trades	10
Total		40

Group 25 - Engineering Drawing

CTS Trades Covered: Refrigeration and Air conditioning & Central Air condition Plant
Mechanic

1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the related trades. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to trades.	8
Total		40

2nd -Year		
Sl. No.	Topic	Time in hrs.
1.	Reading of Electrical, Electronic & Mechanical Sign and Symbols used in RAC	4
2.	Sketches of Electrical, Electronic & Mechanical components used in RAC	6
3.	Reading of Electrical wiring diagram and Layout diagram	10
4.	Drawing of Electrical circuit diagram used in RAC	10
5.	Drawing of Block diagram of Instruments & equipment of trades	10
Total		40

Group 26 - Engineering Drawing		
CTS Trades Covered: Painter (General)		
1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Total	40
2.	Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	8
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke, double stroke, inclined 	12
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead 	10
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Painter (General) trades. 	8
Total		40

2nd Year Engg. Drawing not required.

Group 27 - Engineering Drawing		
CTS Trades Covered: Marine Fitter		
1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Rhombus, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Marine Fitter trade. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to Marine Fitter trade.	8

2nd -Year		
Sl. No.	Topic	Time in hrs.
1.	Reading of drawing of nuts, bolt, screw thread, different types of locking devices e.g., Double nut, Castle nut, Pin, etc.	10
2.	Reading of Rivets and rivetted joints, welded joints	10
3.	Reading of drawing of pipes and pipe joints	10
4.	Reading of Job Drawing & Assembly view	10
Total		40

Group 28 - Engineering Drawing**CTS Trades Covered: Refractory Technician**

1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	4
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	2
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Refractory Technician trade. 	4
6.	Concept and reading of Drawing in <ul style="list-style-type: none"> • Concept of axes plane and quadrant • Concept of Orthographic and Isometric projections • Method of first angle and third angle projections (definition and difference) 	14
7.	Reading of Job drawing related to Refractory Technician.	8
Total		40

2nd Year Engg. Drawing not required.

Group 29 - Engineering Drawing**CTS Trades Covered:** Vessel Navigator

1st -Year		
Sl. No.	Topic	Time in hrs.
1.	Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument 	2
2.	Lines- Types and applications in drawing Free hand drawing of – <ul style="list-style-type: none"> • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools and measuring tools. 	6
3.	Drawing of Geometrical figures: <ul style="list-style-type: none"> • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke. 	6
4.	Dimensioning <ul style="list-style-type: none"> • Types of arrowhead • Leader line with text • Position of dimensioning (Unidirectional, Aligned) 	6
5.	Symbolic representation – <ul style="list-style-type: none"> • Different symbols used in the Vessel Navigator trade. 	6
7.	Reading of Navigational Chart drawing	14
Total		40

2nd Year Engg. Drawing not required.

CTS 1 Year Engineering Trade				
Sl. No.	Trade	Duration	Sector	Group
1	Mechanic Auto Body Repair	1 Year	Automotive	1
2	Mechanic Auto Electrical and Electronics	1 Year	Automotive	1
3	Mechanic Diesel	1 Year	Automotive	1
4	Mechanic Tractor	1 Year	Automotive	1
5	Mechanic Two and Three-wheeler	1 Year	Automotive	1
6	Pump Operator cum Mechanic	1 Year	Automotive	2
7	Foundryman	1 Year	Capital Goods & Manufacturing	3
8	Marine Engine Fitter	1 Year	Capital Goods & Manufacturing	4
9	Mechanic Lens/ Prism Grinding	1 Year	Capital Goods & Manufacturing	5
10	Sheet Metal Worker	1 Year	Capital Goods & Manufacturing	6
11	Welder	1 Year	Capital Goods & Manufacturing	7
12	Welder (Fabrication & Fitting)	1 Year	Capital Goods & Manufacturing	7
13	Welder (GMAW & GTAW)	1 Year	Capital Goods & Manufacturing	7
14	Welder (Pipe)	1 Year	Capital Goods & Manufacturing	7
15	Welder (Structural)	1 Year	Capital Goods & Manufacturing	7
16	Welder (Welding & Inspection)	1 Year	Capital Goods & Manufacturing	7
17	Artisan Using Advanced Tool	1 year	Capital Goods & Manufacturing	8
18	Industrial Robotics & Digital Manufacturing Technician	1 year	Capital Goods & Manufacturing	8
19	Manufacturing Process Control And Automation	1 year	Capital Goods & Manufacturing	8
20	Plastic Processing Operator	1 Year	Chemicals & Petrochemicals	9
21	Carpenter	1 Year	Construction	10
22	Domestic Painter	1 Year	Construction	11

23	Industrial Painter	1 Year	Construction	11
24	Mechanic Auto Body Painting	1 Year	Automotive	11
25	Mason (Building Constructor)	1 Year	Construction	12
26	Solar Technician (Electrical)	1 Year	Environmental Science	13
27	Warehouse Technician	1 Year	Logistics	14
28	In Plant Logistics Assistant	1 Year	Logistics	14
29	Stone Mining Machine Operator	1 Year	Mining	15
30	Stone Processing Machine Operator	1 Year	Mining	15
31	Plumber	1 Year	Plumbing	16
32	Rubber Technician	1 Year	Rubber Industry	17

CTS 2 Year Engineering Trade				
Sl. No.	Trade	Duration	Sector	Group
1	Mechanic Agricultural Machinery	2 Years	Automotive	18
2	Mechanic Motor Vehicle	2 Years	Automotive	18
3	Mechanic Electric Vehicle	2 year	Automotive	18
4	Aeronautical Structure and Equipment Fitter	2 Years	Capital Goods & Manufacturing	19
5	Central Air condition Plant Mechanic	2 Years	Capital Goods & Manufacturing	20
6		2 Years	Capital Goods & Manufacturing	19
7	Machinist	2 Years	Capital Goods & Manufacturing	19
8	Machinist Grinder	2 Years	Capital Goods & Manufacturing	19
9	Marine fitter	2 Years	Capital Goods & Manufacturing	21
10	Mechanic Machine Tool Maintenance	2 Years	Capital Goods & Manufacturing	19
11	Mechanic Mining Machinery	2 Years	Capital Goods & Manufacturing	19
12	Operator Advanced Machine Tool	2 Years	Capital Goods & Manufacturing	19
13	Refractory Technician	2 Years	Capital Goods & Manufacturing	22
14	Refrigeration & Air Conditioning Technician	2 Years	Capital Goods & Manufacturing	20
15	Technician Mechatronics	2 Years	Capital Goods & Manufacturing	19
16	Textile Mechatronics	2 Years	Capital Goods & Manufacturing	19
17	Tool & Die Maker (Dies & Moulds)	2 Years	Capital Goods & Manufacturing	19
18	Tool & Die Maker (Press, Tools, Jigs & fixtures)	2 Years	Capital Goods & Manufacturing	19
19	Turner	2 Years	Capital Goods & Manufacturing	19

20	Vessel Navigator	2 Years	Capital Goods & Manufacturing	23
21	Basic Designer and Virtual Verifier (Mechanical)	2 year	Capital Goods & Manufacturing	19
22	Advanced CNC Machining	2 year	Capital Goods & Manufacturing	19
23	Attendant Operator (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
24	Electroplater	2 Years	Chemicals & Petrochemicals	28
25	Instrument Mechanic (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
26	Laboratory Assistant (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
27	Maintenance Mechanic (Chemical Plant)	2 Years	Chemicals & Petrochemicals	24
28	Painter (General)	2 Years	Construction	25
29	Electronics Mechanic	2 Years	Electronics & Hardware	26
30	Instrument Mechanic	2 Years	Electronics & Hardware	26
31	Mechanic Consumer Electronic Appliances	2 Years	Electronics & Hardware	26
32	Technician Medical Electronics	2 Years	Electronics & Hardware	26
33	Technician Power Electronics System	2 Years	Electronics & Hardware	26
34	Technician Electronics System Design & Repair	2 Years	Electronics & Hardware	26
35	Information and Communication Technology System Maintenance	2 Years	IT & ITeS	27
36	Information Technology	2 Years	IT & ITeS	27
37	Electrician	2 Years	Power	28
38	Electrician - Power Distribution	2 Years	Power	28
39	Lift and Escalator Mechanic	2 Years	Power	28
40	Wireman	2 Years	Power	28
41	Spinning Technician	2 Years	Textile & Handloom	29
42	Textile Wet Processing Technician	2 Years	Textile & Handloom	29
43	Weaving Technician	2 Years	Textile & Handloom	29

List of Draughtsman group Trades				
Sl. No.	Trade	Duration	Sector	Group
1	Additive Manufacturing Technician (3D Printing)	1 Year	Capital Goods & Manufacturing	D'man
2	D'man Mechanical	2 Years	Capital Goods & Manufacturing	D'man
3	Architectural Draughtsman	2 Years	Construction	D'man
4	Civil Engineer Assistant	2 Years	Construction	D'man
5	D'man Civil	2 Years	Construction	D'man
6	Interior Design & Decoration	1 Year	Construction	D'man
7	Surveyor	2 Years	Construction	D'man
List of Visually Impaired (Divyang) group of Trade				
1	Metal Cutting Attendant (for Visually Impaired)	2 Years	Capital Goods & Manufacturing	Engg. (VI)