

# ENGINEERING DRAWING - I

**(Common for CTS Engineering trades during 1<sup>st</sup> year)  
(Not applicable for Draughtsman trade Group)**

| Sl. No. | Topic  | Time in hrs. |
|---------|--|--------------|
| 1.      | Engineering Drawing – Introduction<br>Introduction to Engineering Drawing and Drawing Instruments – <ul style="list-style-type: none"> <li>• Conventions</li> <li>• Viewing of engineering drawing sheets.</li> <li>• Method of Folding of printed Drawing sheet as per BIS SP: 46-2003</li> </ul>   | 1            |
| 2.      | Drawing Instrument <ul style="list-style-type: none"> <li>• Drawing board, T-square, Drafter (Drafting M/c), Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips.</li> </ul>   | 1            |
| 3.      | Free hand drawing of – <ul style="list-style-type: none"> <li>• Lines, polygons, ellipse etc.</li> <li>• Geometrical figures and blocks with dimension</li> <li>• Transferring measurement from the given object to the free hand sketches.</li> <li>• Solid objects – Cube, Cuboids, Cone, Prism, Pyramid, Frustum of Cone with dimensions.</li> <li>• Free hand drawing of hand tools and measuring tools, simple fasteners (nuts, bolts, rivets etc.) trade related sketches</li> </ul> | 10           |
| 4.      | Lines <ul style="list-style-type: none"> <li>• Definition, types and applications in drawing as per BIS: 46-2003</li> <li>• Classification of lines (Hidden, centre, construction, extension, Dimension, Section)</li> <li>• Drawing lines of given length (Straight, curved)</li> <li>• Drawing of parallel lines, perpendicular line</li> <li>• Methods of Division of line segment</li> </ul>   | 2            |
| 5.      | Drawing of Geometrical figures:<br>Definition, nomenclature and practice of – <ul style="list-style-type: none"> <li>• Angle: Measurement and its types, method of bisecting.</li> <li>• Triangle: different types</li> <li>• Rectangle, Square, Rhombus, Parallelogram.</li> <li>• Circle and its elements</li> <li>• Different polygon and their values of included angles. Inscribed and circumscribed polygons</li> </ul>  | 8            |
| 6.      | Lettering & Numbering – <ul style="list-style-type: none"> <li>• Single Stroke, Double Stroke, Inclined.</li> </ul>  | 6            |
| 7.      | Dimensioning and its Practice <ul style="list-style-type: none"> <li>• Definition, types and methods of dimensioning (functional, non-functional and auxiliary)</li> <li>• Position of dimensioning (Unidirectional, Aligned)</li> </ul>   | 4            |

|              |   |           |
|--------------|---|-----------|
|              | <ul style="list-style-type: none"> <li>• Types of arrowhead</li> <li>• Leader line with text</li> <li>• Symbols preceding the value of dimension and dimensional tolerance.</li> </ul>  |           |
| 8.           | <p>Sizes and layout of drawing sheets</p> <ul style="list-style-type: none"> <li>• Selection of sizes</li> <li>• Title Block, its position and content</li> <li>• Item Reference on Drawing Sheet (Item list)</li> </ul>  | 2         |
| 9.           | <p>Method of presentation of Engg. Drawing</p> <ul style="list-style-type: none"> <li>• Pictorial View</li> <li>• Orthographic View</li> <li>• Isometric View</li> </ul>  | 2         |
| 10.          | <p>Symbolic representation – different symbols used in the trades</p> <ul style="list-style-type: none"> <li>• Fastener (Rivets, Bolts and Nuts)</li> <li>• Bars and profile sections</li> <li>• Weld, Brazed and soldered joints</li> <li>• Electrical and electronics element</li> <li>• Piping joints and fitting</li> </ul>               | 6         |
| 11.          | <p>Projections</p> <ul style="list-style-type: none"> <li>• Concept of axes plane and quadrant</li> <li>• Orthographic projections</li> <li>• Method of first angle and third angle projections (definition and difference)</li> <li>• Symbol of 1<sup>st</sup> angle and 3<sup>rd</sup> angle projection in 3<sup>rd</sup> angle.</li> </ul> | 15        |
| 12.          | Orthographic projection from isometric projection   | 15        |
| 13.          | Reading of fabrication drawing  | 8         |
| <b>Total</b> |   | <b>80</b> |