

DRAWING INSTRUMENTS AND SHEET LAYOUT

1

1-1 INTRODUCTION

Drawing is an art of representing objects or forms on a surface chiefly by means of lines, using any of a wide variety of tools and techniques. It generally involves making marks on a surface by moving graphite pencils, ink pen, wax colour pencils, crayons, charcoals, pastels, and markers on a plane surface such as paper, canvas etc.

Engineering drawing is a type of drawing used to fully and clearly convey graphically the ideas and information necessary for engineered items. They are usually created in accordance with standard conventions for layout, nomenclature, interpretation, appearance, size, etc. The purpose of engineering drawing is to provide exact geometrical configuration for the construction or analysis of machines, structures, or systems. Today the mechanics of the drawing task has been largely automated, and greatly accelerated, through the use of CAD systems. This chapter deals with the introduction and basic techniques associated with the use of drawing instruments and accessories commonly used in preparing engineering drawings and also the layout of the drawing sheet standard.

MULTIPLE CHOICE QUESTIONS

Choose the most appropriate answer out of the given alternatives:

- i) A drafter helps in drawing
 - (a) Parallel and perpendicular lines
 - (b) Concentric circles
 - (c) Smooth curves
 - (d) All the above
- ii) In the engineering system of paper sizes, which of the following is "A2" size?
 - (a) 841 mm × 1189 mm
 - (b) 594 mm × 841 mm
 - (c) 420 mm × 594 mm
 - (d) 210 mm × 297 mm
- iii) Which of the following pencil leads is hardest?
 - (a) HB
 - (b) H
 - (c) B
 - (d) F

- iv) Which of the following purposes is **not** served by a divider?
- (a) Divide lines or curves into a number of equal parts
 - (b) Transfer measurement from one part of the drawing to another part
 - (c) Make full size, reduced size or enlarged size drawing
 - (d) Step-off a series of equal distances on the drawing
- v) To lay off an angle from a given line, what marks on the protractor should you align for a higher accuracy?
- (a) Center mark and 0° mark only
 - (b) 0° and 180° marks only
 - (c) 0° , 180° , and center marks
 - (d) 0° , 90° and 180° marks
- vi) To draw smooth curves of any nature, draughting instruments used is
- (a) Mini-drafter
 - (b) French curve
 - (c) Templates
 - (d) Eraser Shield
- vii) Parallel lines can be drawn with the help of
- (a) Mini-drafter
 - (b) T-square
 - (c) Pair of set squares
 - (d) All of these
- viii) A typical layout of drawing sheet **do not** contain
- (a) Centering Mark
 - (b) Orientation Mark
 - (c) Trimming marks
 - (d) Identification Mark
- ix) The space for text on a drawing sheet **do not** provide the following information
- (a) Name of the company, title of the drawing, scale and angle of projection used
 - (b) Explanation of special symbols, abbreviations and units of dimensions
 - (c) Instruction related to material, surface treatment and assembly placing
 - (d) Reference made to supplementary drawings and other documents
- x) Grid References on a drawing sheet provide the following information
- (a) Location of details, additions, modifications, revisions, etc. of drawing
 - (b) To facilitate the positioning of the drawing when reproduced
 - (c) To facilitate brief record and initials of the person responsible
 - (d) To facilitate trimming
- xi) Revision tables on a drawing sheet provide the following information
- (a) Designation of revision
 - (b) Date of revision
 - (c) Initials of the person responsible for revision
 - (d) All the above
- xii) Which of the following is preferred containing the statement "All dimensions are in millimeters unless otherwise specified"
- (a) Frames and Borders
 - (b) Title block
 - (c) Item List
 - (d) Revision Table
- xiii) Item list on a drawing sheet provide the following information
- (a) Name of the company, title of the drawing, scale and angle of projection used
 - (b) Item references, name, quantity required and Material specifications
 - (c) Explanation of special symbols, abbreviations and units of dimensions
 - (d) All the above

- xiv) "A" series of paper has length to width ratio of approximately
(a) 3:2 (b) $\sqrt{3}:1$ (c) $\sqrt{2}:1$ (d) 5:3
- xv) Number of orientation mark generally contained by a drawing sheet is
(a) One (b) Two (c) Three (d) Four
- xvi) Extension arm used with engineering compass to facilitate
(a) To draw circles of larger diameter (b) To increase the gripping arm
(c) To adjust distance between the legs (d) To increase accuracy

Answers: (i) a (ii) c (iii) b (iv) c (v) c (vi) b (vii) d (viii) d (ix) a (x) a (xi) d (xii) b
(xiii) b (xiv) c (xv) b (xvi) a