SRM Institute of Science and Technology
College of Engineering and Technology
Department of Mechanical Engineering

# 18MES101L - Engineering Graphics and Design

| | | | |
|---|---|---|---|
| **Reg. No** | | **Ex. No** | 1 |
| **Name of the student** | | **Title of the exercise** | Introduction, lettering, 2D Geometrical constructions |
| **Department/Branch** | | **Semester** | 2 |
| **Section** | | **Date of Exercise** | |

## Regular class problems

1. Write the Capital letters A to Z, small letters a to z and Arabic numbers 0 to 9 (Manually or using CAD software). Refer the Table 1 for lettering specifications. *(20 min /CO-1/ BL 1/ 2 marks)*

**Table 1: Lettering specifications**
**Values in millimeters (mm)**
Lettering A ($d$ = $h$/14)

| *Characteristic* | *Ratio* | | *Dimensions,* (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lettering height (Height of capitals) | $h$ | (14/14)$h$ | 2.5 | 3.5 | 5 | 7 | 10 | 14 | 20 |
| Height of lower-case letters (without stem or tail) | $c$ | (10/14)$h$ | — | 2.5 | 3.5 | 5 | 7 | 10 | 14 |
| Spacing between characters | $a$ | (2/14)$h$ | 0.35 | 0.5 | 0.7 | 1 | 1.4 | 2 | 2.8 |
| Minimum spacing of base lines | $b$ | (20/14)$h$ | 3.5 | 5 | 7 | 10 | 14 | 20 | 28 |
| Minimum spacing between words | $e$ | (6/14)$h$ | 1.05 | 1.5 | 2.1 | 3 | 4.2 | 6 | 8.4 |
| Thickness of lines | $d$ | (1/14)$h$ | 0.18 | 0.25 | 0.35 | 0.5 | 0.7 | 1 | 1.4 |

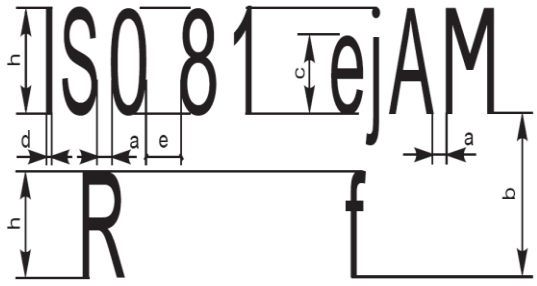


**Figure 1: Letter size charactersitics**
Source: Engineering Drawing and Graphics using AutoCAD, T. Jeyapoovan, Vikas Publishing House Pvt Ltd, New Delhi.

2. Draw margins and Title block in the drawing sheet. If CAD software: Draw only Title block. Refer the Figure 1. *(30 min / CO-1/level 1/ 2 marks)*

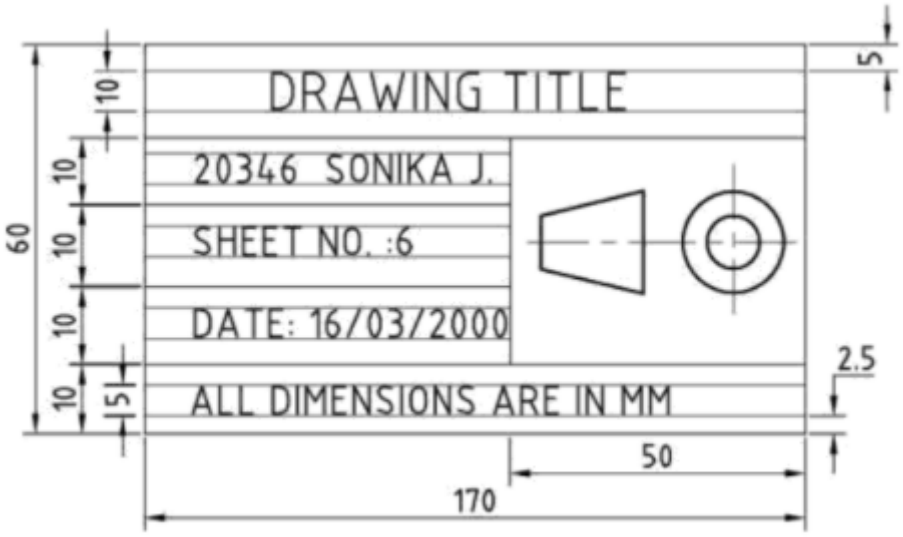


**Figure 1: Title block (All Dimensions are in millimeter**

Source: Engineering Drawing and Graphics using AutoCAD, T. Jeyapoovan, Vikas Publishing House Pvt Ltd, New Delhi.

3. Draw the basic 2D geometric entities, each dimension or side or radius of X+20 mm **(where X is the last two digits of Register number).** Draw a vertical straight line, a horizontal straight line, an equilateral triangle, a square, a regular pentagon, a regular hexagon and a circle. Mark the labels and dimensions as shown in Figure 2. (Students should learn to draw other regular polygon shapes also).

*(50 min / CO-1/level 1/ 4 marks)*

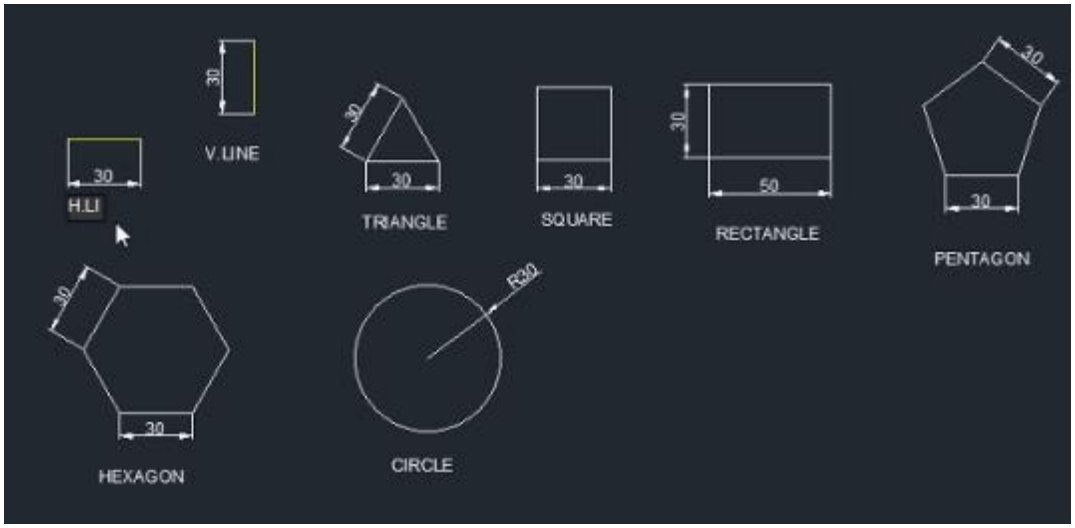


**Figure 2: Two-dimensional geometric entities (All dimensions are in mm)**

**Rubrics: Exercise 1**

| **Name of the faculty grading: Dr/Mr.** | **Date of submission:** | **Date of grading:** |
|---|---|---|
| **Signature of the faculty grading:** | **Grade (out of 10):** | |

| **Criteria** | **No errors** | **Minor errors (1-2 errors)** | **Major errors (3-4 errors)** | **Incomplete (5-6 errors)** | **Resubmission required (more than 7 errors)** |
|---|---|---|---|---|---|
| Orientation (Proper scaling to fit the drawing and maintain the required views) | 4 | 3 | 2 | 1 | 0 |
| Dimensions/Legibility (proper dimensioning, show all the required dimensions with legibility) | 4 | 3 | 2 | 1 | 0 |
| Record writing | 2 | 1.5 | 1 | 0.5 | 0 |
| **Total marks** | **10** | | | | |

**Note: Students must submit the answer with the dimension which has a register number in the AutoCAD (GRID MODE ON). If not, marks of that question will be awarded as zero.**