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18/ENG03/056

CIVIL ENGINEERING

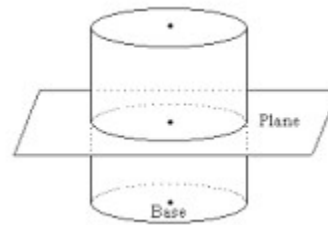
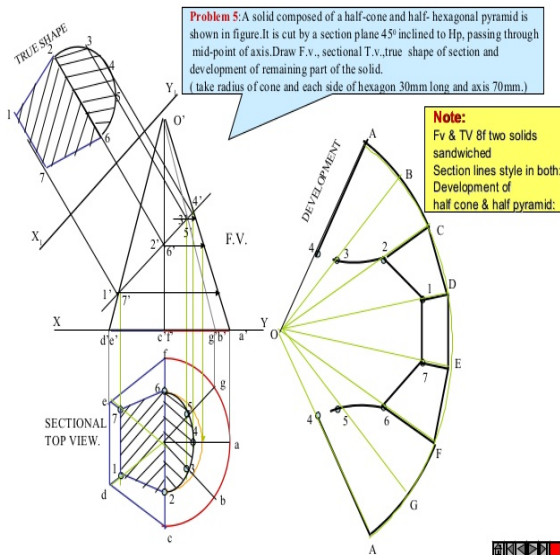
ENGINEERING DRAWING

OBJECTIVE QUESTIONS

- 1) Reference Plane A
- 2) False B
- 3) Directly C
- 4) 120 B
- 5) 60 A
- 6) Rivet B
- 7) Crowning C
- 8) 45 B
- 9) A circle A
- 10) An ellipse A
- 11) Cylinder C
- 12) Frustum D
- 13) Pivot Bearing C
- 14) 55 C
- 15) Horizontal Plane D

THEORY QUESTIONS

- 1) Section surface refers to the figure produced when a cutting plane cuts through a solid object. Various types of section surfaces include: full section and half section.



2)

- Dimension and projection lines are narrow continuous lines 0.35 mm thick, if possible, clearly placed outside the outline of the drawing. As previously mentioned, the drawing outline is depicted with wide lines of 0.7 mm thick. The drawing outline will then be clearly defined and in contrast with the dimensioning system. The projection lines should not touch the drawing but a small gap should be left, about 2 to 3 mm, depending on the size of the drawing. The projection lines should then continue for the same distance past the dimension line
- Centre lines must never be used as dimension lines but must be left clear and distinct. They can be extended, however, when used in the role of projection lines.

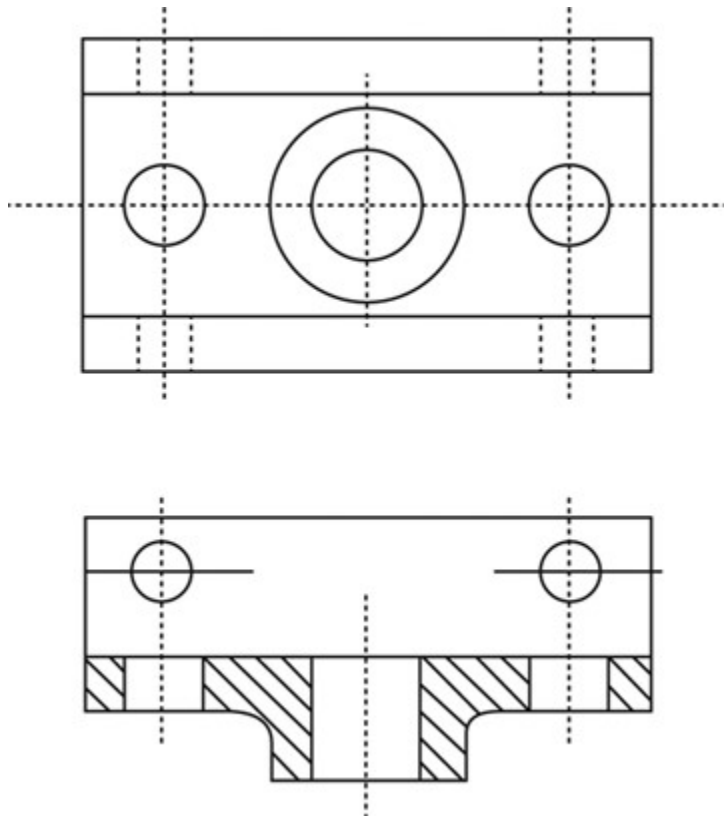
- Dimensions are quoted in millimeters to the minimum number of significant figures. For example, 19 and not 19.0. In the case of a decimal dimension, always use a nought before the decimal marker, which might not be noticed on a drawing print that has poor line definition. We write 0,4 and not .4. It should be stated here that on metric drawings the decimal marker is a comma positioned on the base line between the figures, for example, 5,2 but never 5-2 with a decimal point midway.
- To enable dimensions to be read clearly, figures are placed so that they can be read from the bottom of the drawing, or by turning the drawing in a clockwise direction, so that they can be read from the right hand side.

3) HALF SECTION : Half section is a view of an object showing one-half of the view in section, as in the drawing below. The diagonal lines on the section drawing are used to indicate the area that has been theoretically cut. These lines are called section lining or cross hatching. The lines are thin and are usually drawn at a 45 degree angle to the major outline of the object.

Full-section view

In this view, the section plane is across the object when the cutting plane is right.

The full-sectional view is shown below in Figure (1).



4) **LEADER LINES**-A leader line is a line referring to some form of feature that could be a dimension, an object or an outline. A leader line consists of two parts. These are:

- A type B line (thin, continuous, straight) going from the instruction to the feature.

- A leader is a line referring to a feature (dimension, object, outline, etc.). Leader lines should terminate (Fig. 2.7), (a) with a dot, if they end within the outlines of an object, (b) with an arrow head, if they end on the outline of an object, (c) without dot or arrow head, if they end on a dimension line

5) SCALE

Scaling is a drawing method used to enlarge or reduce a drawing in size while keeping the proportions of the drawing the same. Scales are generally expressed as ratios and the most common scales used in furniture drawing are **1:1**, **1:2**, **1:5**, and **1:10** for reducing and possibly **2:1** for enlarging.

Scaling is used to either:

- **reduce** the drawing in size so that it will fit onto the page, or
- **enlarge** the drawing in size so that all required details are clearly visible.


SCALE 5:1- A 50mm line is to be drawn at a scale of **5:1** (5 times more than its original size). The measurement **50mm** is **multiplied** by **5** to give **250mm**. A 250mm line is drawn.

SCALE 1:10- this drawing has a scale of "1:10", so anything drawn with the size of "1" would have a size of "10" in the real world,

6) ϕ : Diameter

R : Radius

SR : Spherical radius

 : Square

: center line

: cutting plane line

: long break

7) As object, have three dimensions like length, width and height/ thickness. The shapes and sizes of three dimensional objects have to be represented on a sheet of drawing paper, which has only two-dimensional planes.

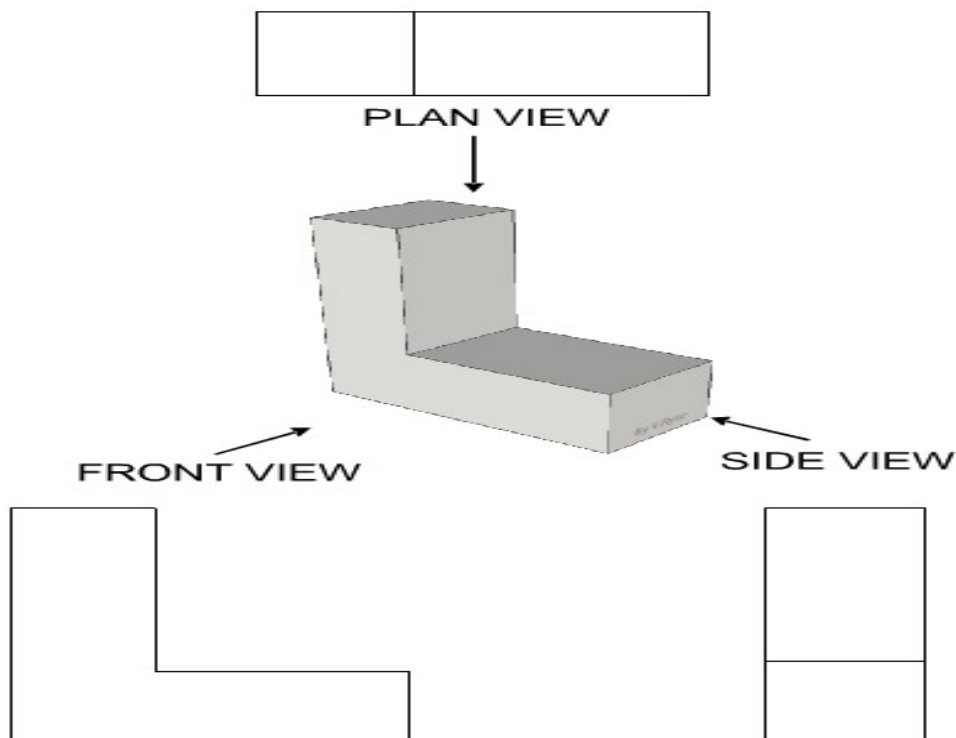
For obtaining the image of an object, various points on the contour of an object, are thrown forward on to a plane by means of straight lines or visual rays. The figure formed by joining various points thus obtained on the plane, is the image of the object and is called Projection.

Orthographic projection: is a type of 'parallel' projection in which the four orthogonal views of an object are shown. The orthographic projection commonly used in the UK is called first angle projection.

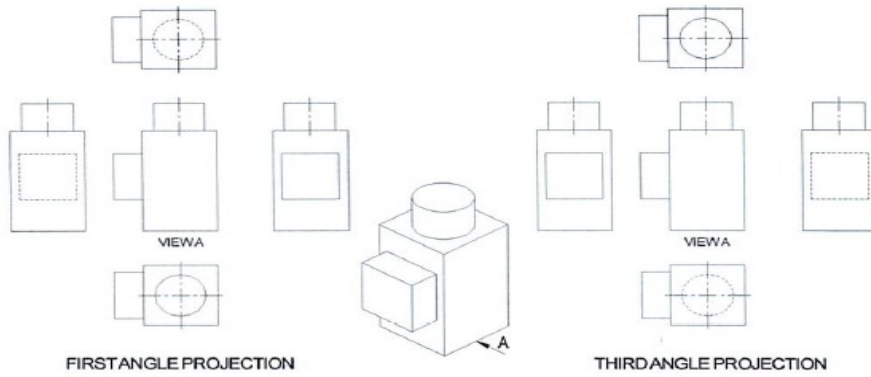
8) If the projections from the object are perpendicular to the projection plan, then such a projection of the object is known as Orthographic Projection. A thorough knowledge of the principles of pictorial projection is required for converting pictorial views into orthographic views.

9) first angle projection:

The front, side and plan views have drawn around the 3D shape. However this is not the correct way of drawing them as they are not in the right positions.



Comparison of First and Third Angle Projection



Third angle projection is one of the methods of orthographic projection used in technical drawing and normally comprises the three views (perspectives): front, top, and side.