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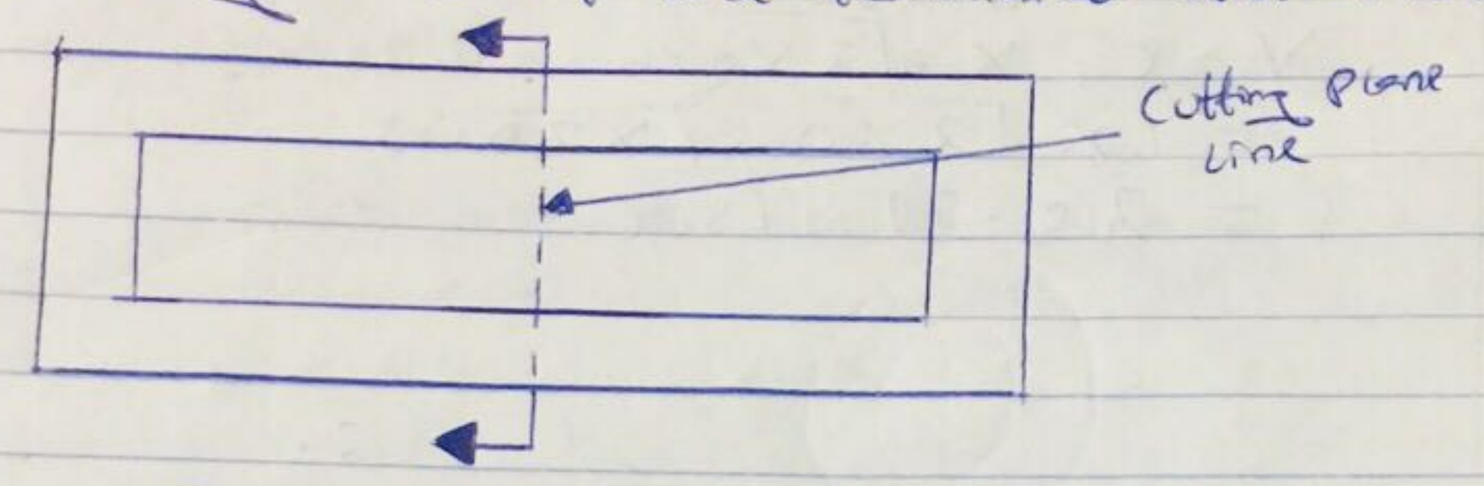
MATRIC NO - 18/ENG06/059
DEPARTMENT - MECHANICAL ENGINEERING

1] Cutting plane

A surface cut by the saw in the drawing above is a cutting plane.

Cutting plane line

A cutting plane is represented on a drawing by a cutting plane line. This is a heavy long-short-short-long kind of line terminated with arrows.



Section lining

The lines in the figure above, which look like saw marks, are called section lining. They are found on most sectional views, and indicate the surface which has been exposed by the cutting plane.

Full Sections

When a cutting plane line passes entirely through an object, the resulting section is called a full section.

Half Sections

If the cutting plane is passed halfway through an object, and one-quarter of the object is removed, the resulting section is a half section.

Broken out sections

In many cases only a small part of a view needs to be sectioned in order to show some internal detail.

Revolved Sections

A revolved section show the shape of an object by rotating a section 90 degrees to face the viewer.

Offset Sections

An offset section is a means of including in a single section features of an object that are not in a straight line.

Removed Section

A section removed from its normal projected position in the standard arrangement of views is called a "removed" section

2] **Principles of Dimensioning**

1] All dimension, extension, and leader lines should be thin, sharp, dark lines

2] Extension lines indicate the points between which the dimension figures apply

3] Each dimension should be terminated by arrowheads touching the extension lines and pointing in opposite directions.

4] Dimensions shown with dimension lines and arrowheads should be placed to be read from the bottom of the drawing (unidirectional system).

5] All dimensions should be given in decimal format.

6] When all dimensions on a drawing are given in inches, the inch marks (") are omitted, the same applies to millimeters.

7] A dimension line should never coincide with an object line or a central line, nor should it be an extension of these lines. Both, however, may be used as extension lines.

8] Crossing of extension lines or dimension lines should be avoided if possible. Where such crossings are unavoidable, there should be no break in either of the lines.

9] Dimensions should be at least 3/8" (10mm) from the object outline, then equally spaced at least 1/4" (6mm) apart.

10] Dimensions are preferably placed outside the outlines of the views.
11] When placement outside the views will result in
(a) dimensions too far from the distance they indicate,
(b) long and confusing extension line (c) any confusion in understanding where the dimension applies, they may be placed inside the view and close to the distance they indicate.
12] As the distance dimensioned becomes less than about 1/2" (12.7mm), the space between extension lines becomes too small for both arrowheads and figures
13] Where there are several parallel dimension lines in a group, the dimension figures should be staggered so that they will not interfere with one another
14] Lettering (notes) should always be placed horizontal on the page, to be read from the bottom of the drawing.

[3] Half Section

for instance, if the cutting plane is passed ~~through~~ Halfway through an object, and one-quarter of the object is removed, the resulting section is a half section.

Full Section

When a cutting plane line passes entirely through an object, the resulting Section is called a full Section.

4] ~~Afo~~ Arrowheads or dot

5] Scale = 5:1

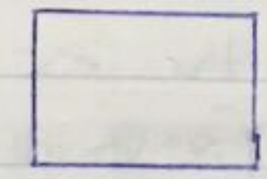
A 5mm line is to be drawn at a scale of 5:1 (that is, 5 times more than it's original size).

Scale = 1:10

Any drawing which 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) a) diameter = Ø

b) radius = R

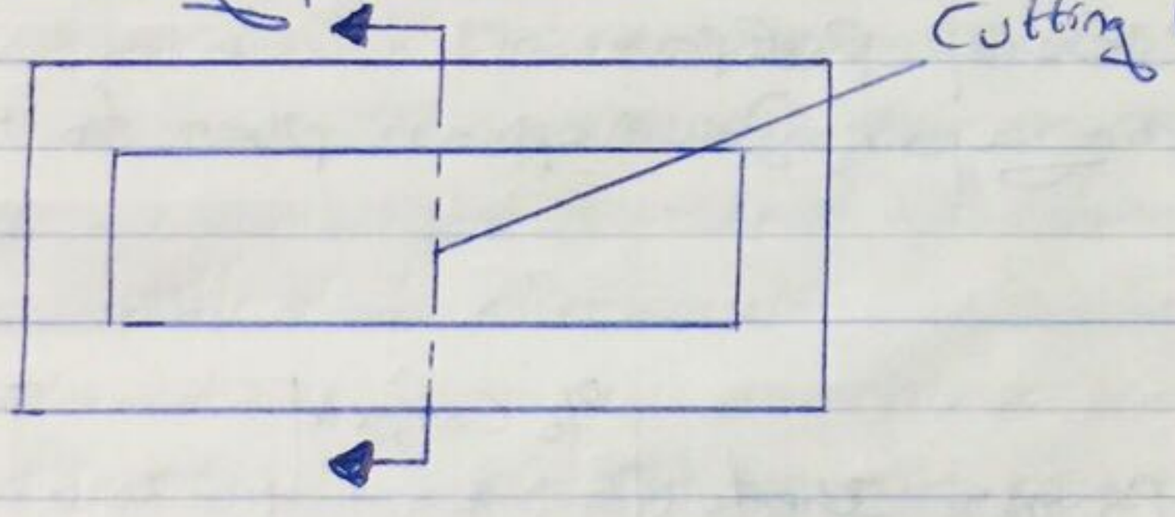
c) Square = 

~~d) Spherical = SR~~

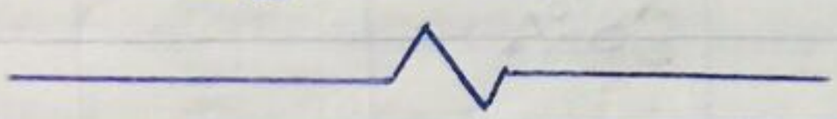
d) Spherical radius = SR

e) Center line = —·—·—·—·—·—

b) Cutting plane line



c) Long break



[7] 1) COORDSYS

2) FEATURECOORDSYS

3) FILTERCOORDSYS

ORTHOGRAPHIC projection

It is also called orthogonal, is the simplest type of projection.

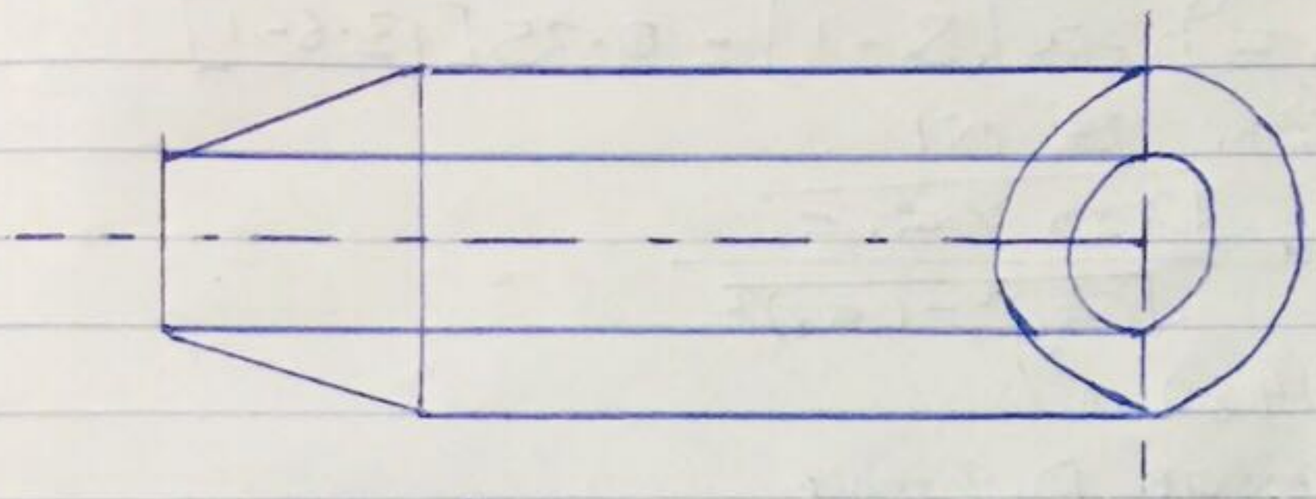
It consists of merely projecting points and vectors in a perpendicular fashion onto a plane;

8) When it Consist of merely projecting points and vectors in a perpendicular way in a plane.

9] First angle projection

First angle projection is a method of Creating a 2D drawing of a 3D object.

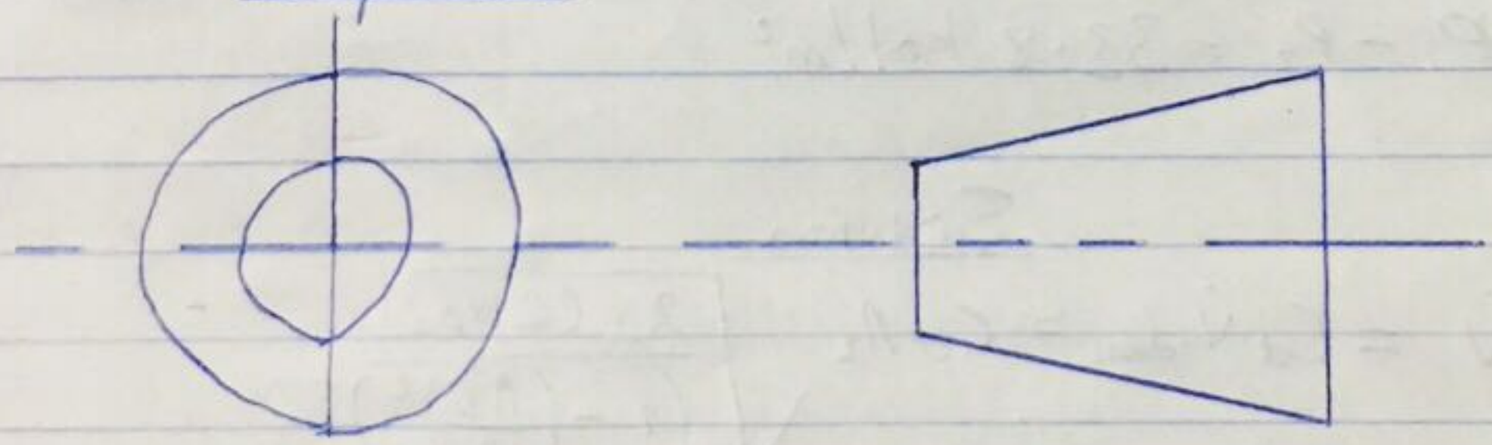
Symbol



Third angle projection

It is a method of orthographic projection which is a technique in portraying a 3D design using a series of 2D views.

Symbol



Objective

1) A (Reference plane)
2) A (True)
3) C (Directly)
4) B (120°)
5) A (60°)
6) B (Rivet)
7) C (Crowning)
8) B (45°)
9) A (a Circle)
10) A (an ellipse
11) C (Cylinder)
12) A (Cone)
13) A (journal bearing)
14) C (55°)
15) D (Horizontal plane)