

LEGHEMO SOLOMON

18/ENG08/OID

BIO MEDICAL ENGINEERING

ENGINEERING DRAWING II (ENG 232)

Objectives

1. A — Reference plane
2. B — False
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 eclipse
11. C — Cylinder
12. A — Cone
13. C — Rivet beaming
14. C — 55°
15. D — Horizontal Plane.

Questions

- ① How do you represent a Sectional Surface on a drawing?
→ The view obtained by cutting an object with an imaginary cutting plane is called Sectional View. The surface produced by cutting the object by the section plane is called Section. It is indicated by thin section lines uniformly spaced, generally at an angle of 45° .
- ② List out the various principles to be followed while dimensioning a drawing.
→
 - (i) Dimensions should not be duplicated nor should the same info be given in two different ways.
 - (ii) Dimensions should be attached to the view that best shows the contour of the feature being dimensioned.
 - (iii) Whenever possible, avoid dimensioning to hidden lines.
 - (iv) Avoid dimensions over or through the object.
 - (v) Whenever possible locate dimensions in adjacent views.
 - (vi) In general, a circle is measured by its diameter circle with line through it, and arc by its radius R0.50
 - (vii) Do not leave any size, shape or material in doubt.

⑥ Give the Shape Identification Symbols for the following:

(a) Diameter $\rightarrow \varnothing$

(b) Radius $\rightarrow R$

(c) Square $\rightarrow \square$

(d) Spherical radius $\rightarrow SR$

⑦ What are the elements to be considered while obtaining a projection and what is an Orthographic projection?

\Rightarrow (i) choose the front view (ii) Decide how many views are needed to completely describe the object
(iii) Draw the visible features of the front view (iv) Draw the top view (v) Project from the top view back to the front view (vi) Draw a 45° projector off of the upper right corner of the box that encloses the front view

Orthographic Projection is a way of drawing an 3D object from different directions. Usually a front, side and plan view are drawn so that a person looking at the drawing can see all the important sides.

⑧ The Projection of an object is called an orthographic projection if the projections from the object are perpendicular to the projection plane.

⑨ First angle Projection :- This is a method of creating a 2D drawing of a 3D object. to get the first angle projection, the object is placed in the first quadrant meaning it's placed between the plane of projection and the observer.

Third angle Projection :- This is a method of orthographic projection which is a technique in portraying a 3D design using a series of 2D views. The object is placed in the third quadrant meaning it's placed between the observer and the projection.

⑦ Contd.

(vii) From the top view, draw projectors over to the 45° line and down in order to create boundaries of the right hand side view.

(viii) Draw the right side view

(ix) Project back to the top and front view from the right side view as needed

(x) Draw center lines where necessary.

③ Explain the terms; Half Section & full Section;
 ⇒ • Half Section; 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. A half Section has the advantage of showing both inside and outside Configurations.

• Full Section; When a Cutting plane line passes entirely through an object, the resulting Section is called a full Section.

④ How are leader lines terminated?

- ⇒ A leader line are terminated;
- ① With a dot, if they end within the outlines of an object.
 - ② With an arrow head, if they end on the Outline of an object.
 - ③ Without dot or arrow head, if they end on a dimension line.

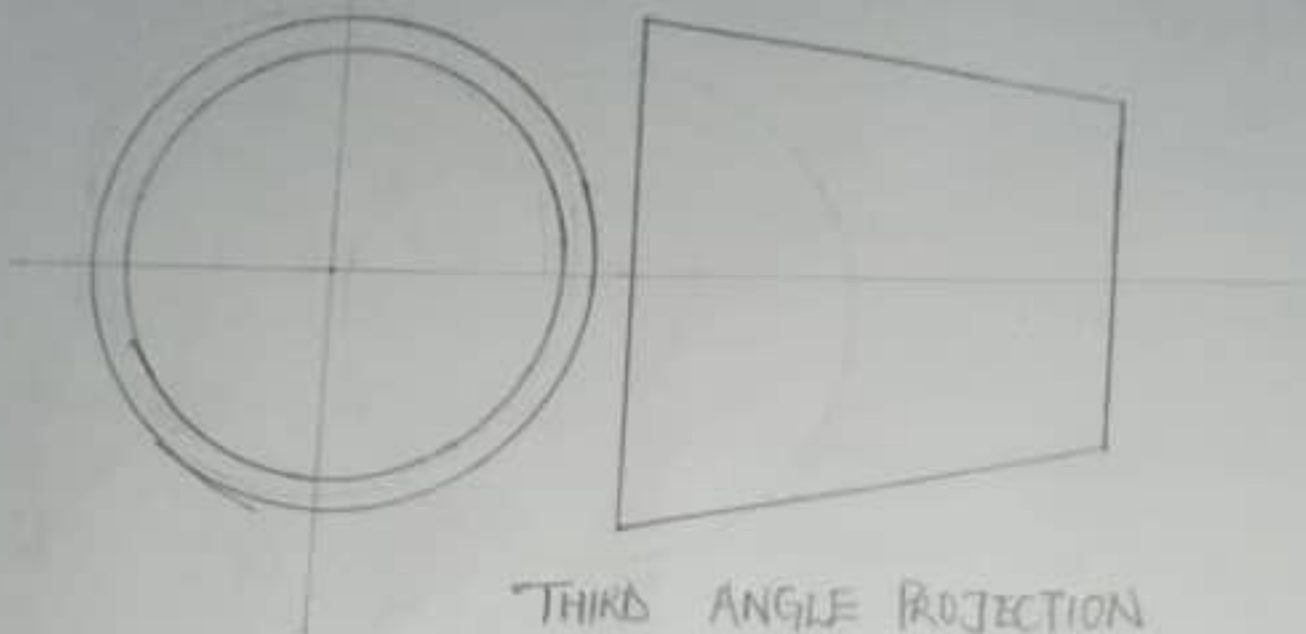


⑤ What do you understand by; ① Scale = 5:1 & ② Scale = 1:10?

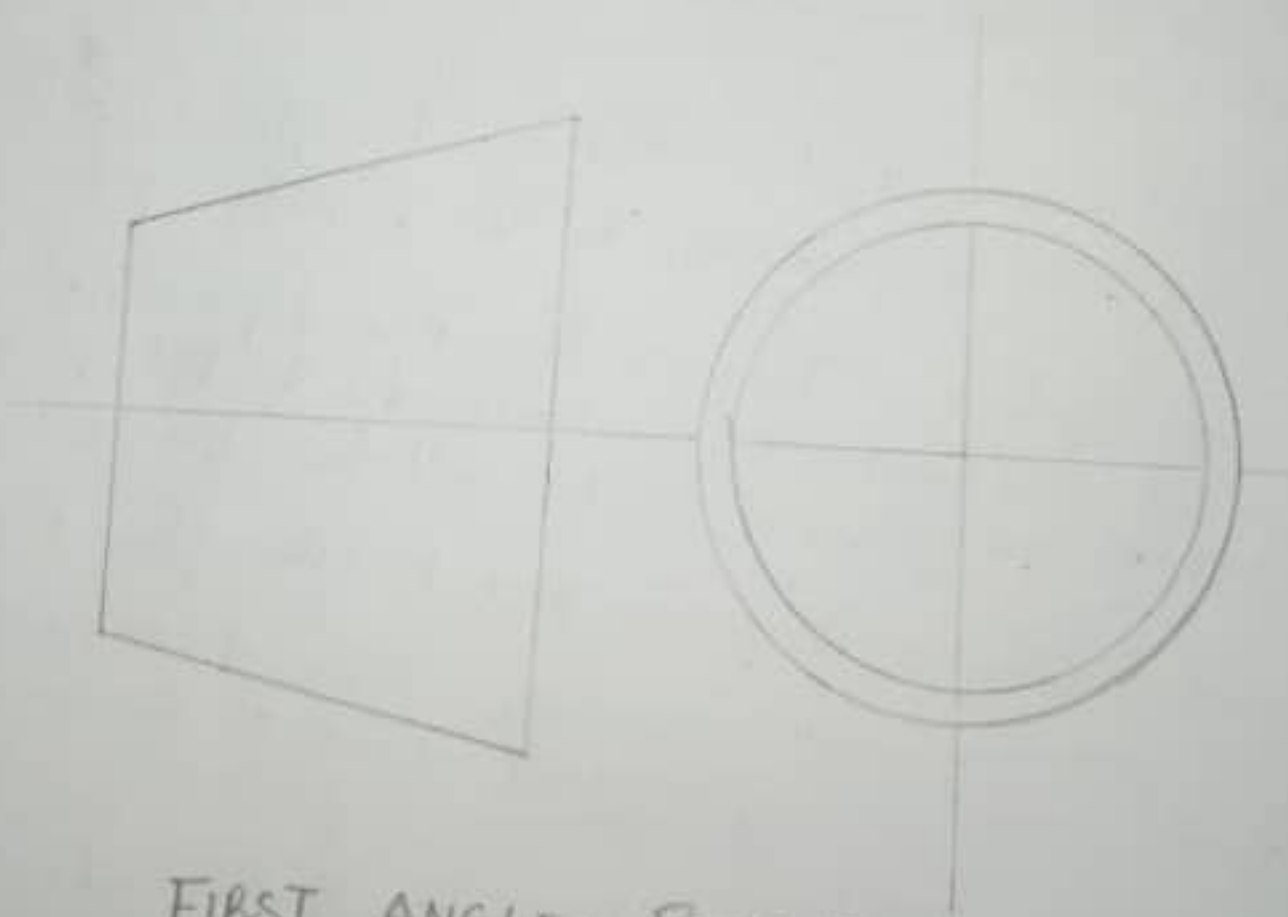
⇒ ① Scale = 5:1; A 50mm line is to be drawn at a Scale 5:1 (means it is 5 times more than its Original Size). The measurement 50mm is multiplied by 5 to give 250mm, which is the line drawn.

② Scale = 1:10; (means that the object is 10 times smaller than in real life Scale 1:1).

9 Contd



THIRD ANGLE PROJECTION



FIRST ANGLE PROJECTION