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**MATRIC NUMBER: 18/ENG08/022**

**DEPARTMENT: BIOMEDICAL ENGINEERING**

**COURSE: ENGINEERING DRAWING**

**DATE: APRIL, 2020s**

1. How do you represent a sectioned surface on a drawing?

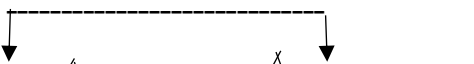
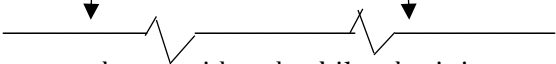
A sectioned surface is represented by section linings, such as hatching

2. List out the various principles to be followed while dimensioning a drawing;
  - All dimension lines should be thin, sharp, dark lines (.5mm/2H)
  - Each dimension should be terminated by arrow heads touching the extension lines, and pointing in opposite directions.
  - Arrowheads should be drawn freehand with .7mm/HB lead
  - Dimensions shown with dimension lines and arrowheads should be placed to be read from the bottom of the drawing.
  - A dimension line should never coincide with an object line, or center line, nor should it be an extension of these lines
  - Lettering should always be placed horizontal on the page, to be read from the bottom of the drawing.
  - Dimensions should be at least 10mm from the object outline.
  - Crossing of dimension or extension lines should be avoided if possible.
  - All dimensions should be given in decimal format.
3. Explain the terms, (a) half section (b) full section

a) Half Section: A half section is a view of an object showing one-half of the view in section. Half section is used to the exterior and interior of the part in the same view. The cutting-plane line cuts halfway through the part and removes one-quarter of the material.

- b) Full Section: A full section is when the imaginary cutting plane passes through the entire object, splitting the drawn object in two with the interior of the object revealed.
4. How are leader lines terminated?

Leader lines are terminated through the use of arrowheads

5. What do you understand by, (a) scale = 5:1 and (b) scale = 1:10?
- a) Scale = 5:1; This means that the drawing to be drawn is to be 5 times its original size
- b) Scale = 1:10 ; This means that the drawing to be drawn should be 10 times lesser than its original size.
6. Give the shape identification symbols for the following:
- a) Diameter;  $\varnothing$
- b) Radius; R
- c) Square ;  $\square$
- d) Spherical radius; SR
- e) Centre line;  $\text{⌘}$  \_\_\_\_\_ - - - - -
- f) Cutting plane line; 
- g) Long break; 

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

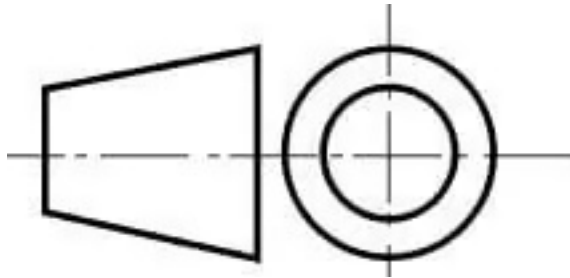
- a) The elements to be considered in projection are;
- Top view of the object to be drawn
  - Side view of the object to be drawn
  - Front view of the object to be drawn
- b) Orthographic projection is the method of projection in which an object is depicted using parallel lines to project its outline onto a plane. It is the projection of a single view of an object onto a drawing surface in which the lines of projection are perpendicular to the drawing surface.
8. When is a projection of an object called an orthographic projection?

The projection of an object is called an orthographic projection when the principal planes or axes of an object are parallel with the projection plane.

9. Explain the following, indicating the symbol to be used in each case: (a) First angle projection, (b) Third angle projection

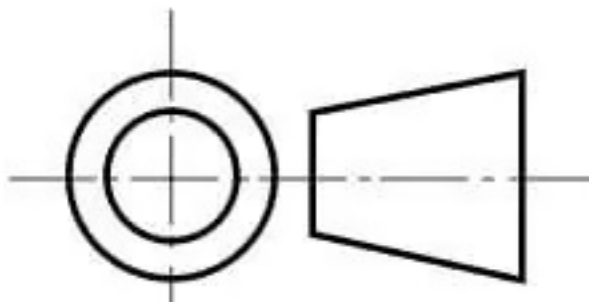
a) First Angle Projection: In this, the object is imagined to be in the first quadrant. Because the observer normally looks from the right side of the quadrant to obtain the front view. The objects will come in between the observer and the plane of projection.

Therefore, in this case, the object is to be transparent, and the projectors are imagined to be extended from various points of the object to meet the projection plane. First, these meeting points when joined in the order form an image



First angle projection symbol

b) Third Angle Projection: This is another perspective projection method used to represent three-dimensional objects using a series of two-dimensional views. In third angle projection, the 3D object to be projected is placed in the third quadrant and is positioned behind the vertical plane and below the horizontal plane. Unlike in first angle projection where the plane of projection is supposedly opaque, the planes are transparent in third angle projection.



Third angle Projection symbol

## OBJECTIVES

1. A

2. B

3. C

4. A

5. A

6. B

7. C

8. B

9. A

10. A

11. C

12. A

13. C

14. C

15. D