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18/ENG01/012

CHEMICAL ENGINEERING

ENG 232   ENGINEERING DRAWING II

ASSIGNMENT

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

It is represented by hatching the surface of the object which the cutting plane passed through. This is achieved by drawing thin lines inclined at angle of 45 degrees but note a hole is not to be sectioned.

2. List out the various principles to be followed while dimensioning a drawing.

- Each dimension should be terminated by arrowheads touching the extension lines and pointing in opposite directions.
- When all dimensions on a drawing are given in inches, the inch marks (") are omitted, the same applies to millimeters. If metric units are used, the word METRIC will appear boxed in a spot toward the lower portion of the drawing sheet.
- A dimension line should never coincide with an object line or a center line, nor should it be an extension of these lines.
- Wherever possible avoid dimensioning to hidden lines.
- The dimensions should be given on such view which illustrates the true shape and size of an object.
- The dimensions should not be repeated unless necessary, i.e The unnecessary dimensions should be avoided
- Avoid dimensions over or through the object.

3. Explain the terms, (*a*) half section, (*b*) Full section

Half-sectioning- in engineering is a scale drawing of a section through a symmetrical object that shows only half the object. It is a scale drawing of a section through a symmetrical object that shows only half the object. It shows a view of an object showing one-half of the view in section. Here, the cutting plane does not through the entire object but rather the cutting plane

is assumed to bend at a right angle and cuts through only half of the represented object, not the full length. When the quarter of the object that was cut is removed, the remainder is called a "half section.

Full-sectioning- If the imaginary cutting plane passes through the entire object, splitting the drawn object in two with the interior of the object revealed, this is called a full section. It's cutting plane passes through the entire object, i.e into half.

4. How are leader lines terminated?

A leader line is a line that establishes a connection between a graphical representation of an item and some text. It can be terminated with the arrow head (usually points to edges), dot (points to faces) and tick.

5. What do you understand by, (a) scale = 5:1 and (b) scale = 1:10?

(a) The Scale 5:1 = is scaling up; it is five (5) times more than the original size. For example if a 5cm line is to be drawn with this scale then a 25cm line will be drawn instead (5cm * 5 =25cm).

(b) The scale 1:10 = is scaling down; it is ten (10) times less than the original size. For example if a 50mm line is to be drawn with this scale then a 5mm line will be drawn instead (50mm / 10 = 5mm)

6. Give the shape identification symbols for the following: (*a*) diameter, (*b*) radius, (*c*) square and (*d*) spherical radius.

(a) Diameter = Ø (circle with a line across). Eg. Ø

(b) Radius = R. Eg. R50

(c) Square = ☐

(d) Spherical radius = SR Centre line

(e) cutting plane line = CL or ℄

(f) long break = break line

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

Elements to be considered are;

➢ Plan.
➢ Front Elevation.
➢ End Elevation.

Orthographic projection is a method of representing three-dimensional objects, usually by three two-dimensional drawings in each of which the object is viewed along parallel lines that are perpendicular to the plane of the drawing. It consists of the top view, front view and the side view.

8. When is a projection of an object called an orthographic projection?

An orthographic projection normally contains three views of the object: the front view in the lower left corner, the top view in the upper left corner, and the right side view in the lower right corner. an orthographic projection is a way of representing a three-dimensional object in two dimensions. It uses different two-dimensional views of the object instead of a single three-dimensional view

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

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

FIRST ANGLE PROJECTION
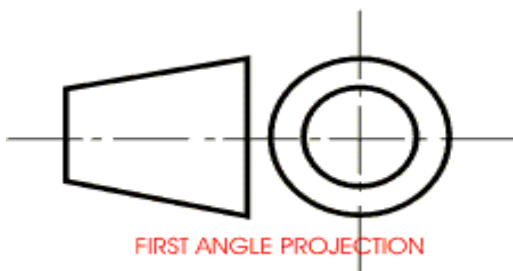
Third Angle Projection- Third Angle projection is a method of orthographic projection which is a technique in portraying a 3D design using a series of 2D views. the object is placed below

and behind the viewing planes meaning the plane of projection is between the observer and the object


THIRD ANGLE PROJECTION
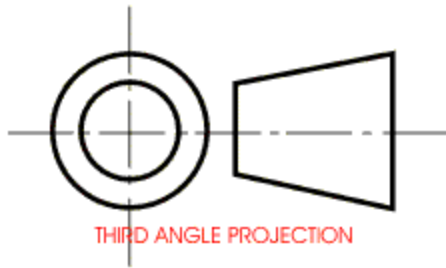
Objectives.

1. To project the auxiliary view, an imaginary plane known as ………….

   a) **Reference Plane**

   b) Principle plane

   c) Normal plane

   d) Inclined plane

2. Reference plane is parallel to the direction of view

   a) **True**

   b) False

3. Dimension of one side of the inclined surface can be………………projected on the

   reference plane

   a) Indirectly

   b) Equally

   c) Directly

   d) Normally

4. In isometric projection the three edges of an object are inclined to each other at

(a) 60º (b) **120º** (c) 100º (d) 90º

5. The angle between the flanks of a metric thread is

(a) **60⁰** (b) 90° (c) 75° (d) 55°

6. Which one among the following represents a permanent fastener

a) Nut b) **Rivet** c) Screw d) Bolt

7. The convexity provided on the rim of the solid web cast iron pulley is called

   a) Bending b) Curving c) **Crowning** d) Riveting

8. Section lines are generally inclined with the base, at an angle of

   a) 30° b)**45⁰** c)60° d)90°

9. The isometric view of a sphere is always

a**) a circle** b) an ellipse c) a Parabola d) a Semicircle

10. In isometric projection, the four center method is used to construct

    a) **an ellipse** b) a square c) a triangle d) a rectangle
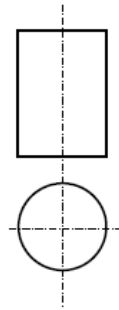
11. C) **Cylinder**

(v)   With respect to the front view and top view given below, name the solid
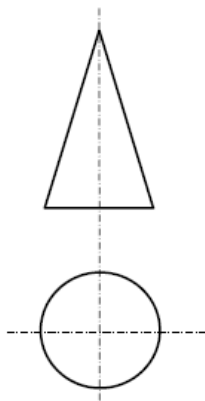
(a) Cone
(b) Cylinder
(c) Cube
(d) Frustum

12. (a) **Cone**

(i) With respect to the elevation and plan given below, name the solid

(a) Cone

(b) hexagonal prism

(c) cylinder

(d) hexagonal pyramid

13.   A footstep bearing is a

a) journal bearing b) thrust bearing c) **pivot bearing** d) pedestal bearing

14.   The angle between the flanks of B.S.W. thread is

a) 60° b) 65° c) **55°** d)75°

15.   Top view is projected on the

a) Vertical Plane b) Corner Plane c) Side Plane d) **Horizontal Plane**