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MATRIC NO: 18/ENG08/005

DEPARTMENT: BIOMEDICAL ENGINEERING

COURSE CODE: ENG 232

COURSE TITLE: ENGINEERING DRAWING II

ASSIGNMENT:

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

   ANS:

   To produce a section of an object, it is cut by an imaginary plane which involves removing one or more parts and therefore revealing a view of the effects of dissection. A sectioned surface on a drawing is therefore represented by a cut on the drawing elevations which are plan, front and end; usually with long-short dash lines.

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

ANS: The various principles to be followed while dimensioning a drawing are:

I. Dimensions should not be duplicated, nor should the same information be given in two different ways.

II. No line of the drawing should be used as a dimension line or coincide with a dimension line.

III. Dimensions should be attached to the view that best shows the contour or shape of the feature being dimensioned.

IV. Wherever possible, avoid dimensioning to hidden lines.

V. Avoid dimensions over or through the drawing.

VI. Wherever possible locate dimensions in adjacent views

VII. Holes are located by their centerlines, which may be extended and used as an extension line

VIII. Holes should be located and sized in the view that shows that feature as a circle.

IX. Dimension line should never cross other dimension lines.

X. Each dimension should be given clearly, so that it can be interpreted in one way.

XI. Dimension lines should be uniformly spaced throughout the drawing.

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

ANS:

(a.) Half Section

A half section is a view of an object which exposes the interior of one half of an object or the view in section while retaining the exterior of

the other half. Half sections are used primarily for symmetric objects or assembly drawings with the aid of the diagonal lines 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. The spacing between lines should be uniform. The line that separates the interior and exterior may be a centerline or a visible line. Hidden lines should not be shown on either half. Its main purpose is to show an object's internal and external construction in the same drawing.

(b.) Full Section

A full section is the most widely-used sectional view. It involves the cutting plane line passing completely through the entire drawn object, splitting it into two with the interior of the object revealed through the part. Normally a view is replaced with the full section view. The section-lined areas are those portions that have been in actual contact with the cutting-plane.

4. How are leader lines terminated?

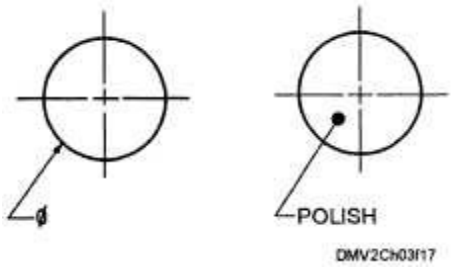
ANS:

Leader lines can be terminated using:

- Arrow head

- Dots

Use arrowheads to terminate leader lines at the outline of an object. Use dots to terminate leader lines within the outline of the drawn object or on the surface of the object.



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

ANS:

(a.) scale = 5:1

This means a line or drawn object should be drawn 5 times more than its original size.

(b.) scale = 1:10

This means a line or drawn object should be drawn 10 times less than its original size

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

ANS:

(a.) diameter

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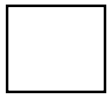
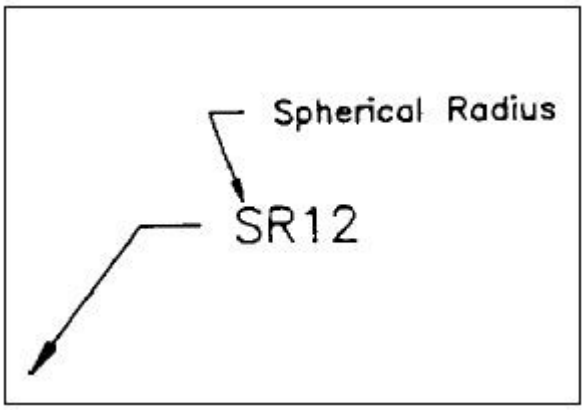
(b.) radius

R

(c.) square



(d.) spherical radius



(a) Centre line, (b) cutting plane line and (c) long break

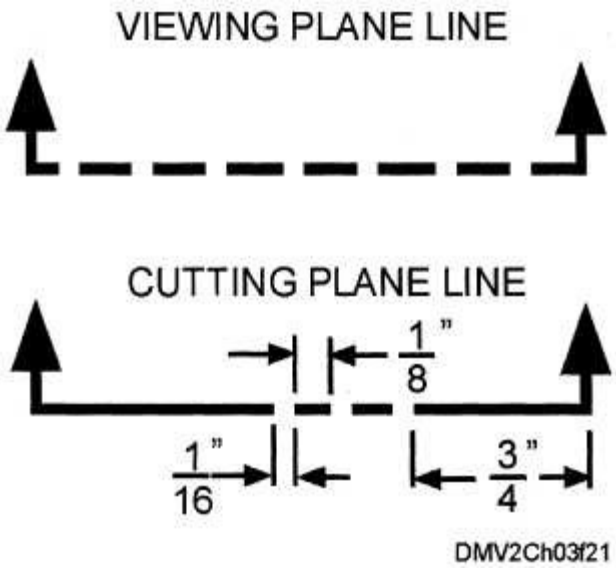
(a.) Centre line

CL or ℄

Centre ——— – ——— – ——— – ——— – ——— – **(thin line)**

(b.) Cutting plane line

A-A



(c.)Long break

(thick)

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

ANS: Elements to be considered while obtaining a projection are:

i. The object

ii. The plane of projection

iii. The point in space or sight

iv. The front view, side view and plan view

Orthographic Projection is a method of projection in which an object is depicted using parallel lines to project its outline on to a plane. It can also be defined as a means of representing three-dimensional objects in two dimensions. It is a form of parallel projection, in which all the projection lines are orthogonal to the projection plane, resulting in every plane of the scene appearing in affine transformation on the viewing surface.

Orthographic Projection is also a way of drawing an 3D object from different directions.

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

ANS:

A projection of an object is said to be orthographic when drawn using the first angle projection or third angle projection.

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

ANS:

First Angle and Third Angle only differ in the position of the plan, front and side views.

(a.) First angle Projection

First Angle is one of the ways of representing three-dimensional objects with respect to two dimension in which the object is placed in the first quadrant.

(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.

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) 60o (b) 90o (c) 75o (d) 55o

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) 30o **b)45o** c)60o d)90o

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

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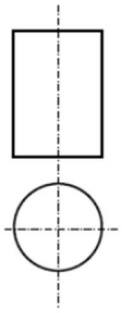
(i) With respect to the elevation and plan given below, name the solid



(a) Cone
(b) hexagonal prism
(c) cylinder
(d) hexagonal pyramid

(c.) cylinder

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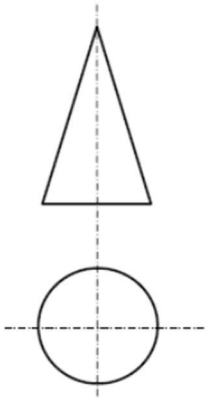
(v) With respect to the front view and top view given below, name the solid



(a) Cone
(b) Cylinder
(c) Cube
(d) Frustum

(a.) Cone

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) 60o b) 65o **c) 55o** d)75o

15. Top view is projected on the

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