

## ENG 232 ANSWERS

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

A sectioned surface is represented with sectioned lines or hatching drawn on the cut surfaces produced by the plane. Thin lines inclined at angle 45.

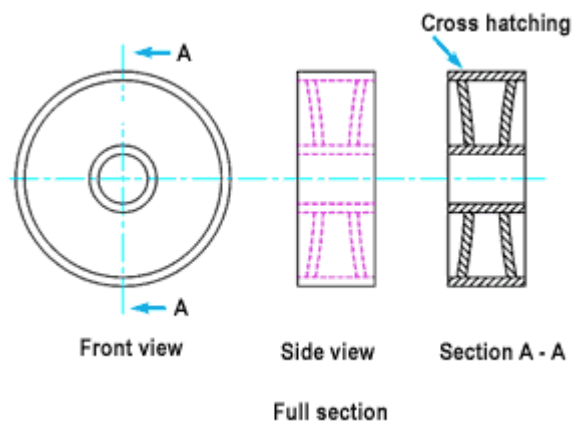
### 2. List out the various principles to be followed while dimensioning a drawing.

- Dimensions should be placed outside the outline of the view, this is achieved by drawing projection lines.
- Dimension and projection lines should be thin, continuous lines
- There should be a small gap between the outline and the start of the projection line.
- The dimension lines should have filled out arrow heads about 3mm long to each end and these must not touch the projection or the other limiting line.
- The dimension line which is nearest to the outline should be about 10mm from the outline for clarity.
- Dimensions are quoted in millimeters to the minimum number of significant figures. For example, 19 and not 19.0. In the case of a decimal dimension, always use a ought before the decimal marker, which might not be noticed on a drawing print that has poor line definition.

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

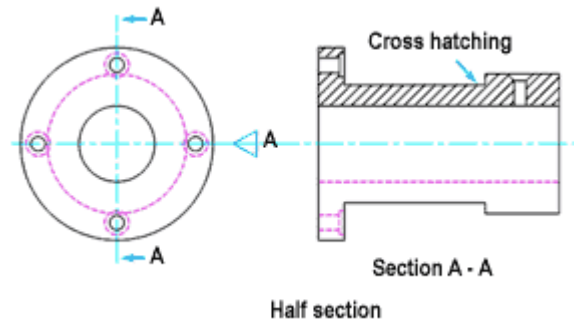
#### a. Full sectional views

When the cutting plane is right across the object it results in a full sectional view (commonly referred to as a full section).



**b. Half sectional views**

Half sectional views are used when an object is symmetrical (the same either side of the centre line). One half is used as a sectional view to show the inside and the other half shows the outside view. The cutting plane only removes a quarter of the object.



**4. How are leader lines terminated?**

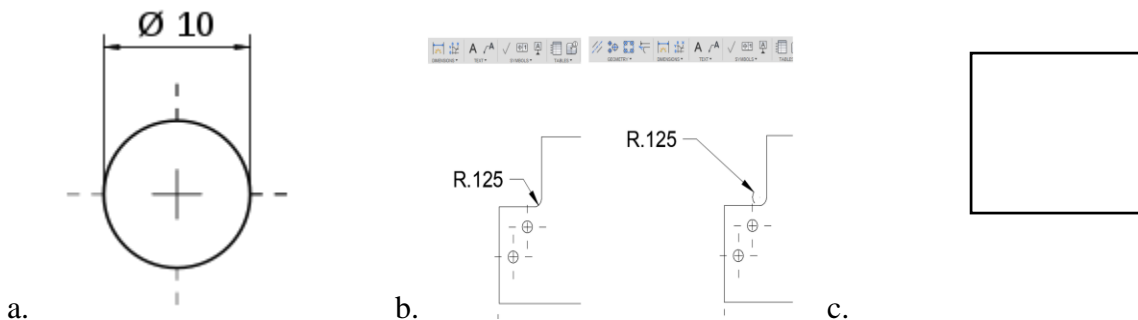
Leader lines are terminated in an arrow head or dots.

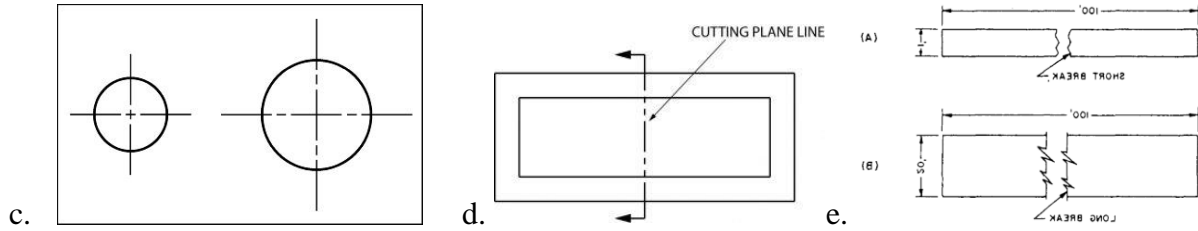
**5. What do you understand by, (a) scale = 5:1 and (b) scale = 1:10?**

- a. Scale= 5:1 means that the actual drawing has been increased by five. **Fives times full size.**
- b. Scale=1:10 means the actual drawing has been decreased by ten. **One-tenth the full size.**

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

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





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

- Top view/ Plan
- Front view/Elevation
- Side view/End

ORTHOGRAPHIC PROJETION is a method of projection in which an object is depicted using parallel lines to project its outline on to a plane (sometimes referred to as orthogonal **projection**) it means of representing three-dimensional objects in two dimensions. .

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

An object is called an orthographic projection when the 3 dimensional drawing has been represented in a 2 dimensional plane or principle axis.

**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** is one of the methods used for orthographic projection drawings and is approved internationally except the United States. In this projection method, the object is placed in the first quadrant and is positioned in front of the vertical plane and above the horizontal plane.
- b. In **Three Dimensional Projection**, the 3 dimensional 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. This projection method is mainly used in the United States and Japan stipulates the use of third angle projection schema for industrial designs for product fabrication.

## 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) 60°** (b) 120° (c) 100° (d) 90°

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

(a) **60°** (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) **45°** c) 60° d) 90°

9. The isometric view of a sphere is always

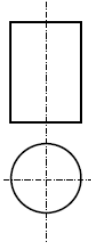
a) a circle **b) an ellipse** c) a Parabola d) a Semicircle

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

a) **an ellipse** b) a square c) a triangle d) a rectangle

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

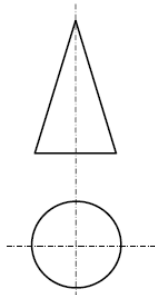


- (a) Cone
- (b) hexagonal prism
- (c) cylinder
- (d) hexagonal pyramid

**(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)  $60^\circ$  b)  $65^\circ$  c)  **$55^\circ$**  d)  $75^\circ$

15. Top view is projected on the

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