NAME: SHUIAB, Khalifa Yaqub

MATRIC N$^{\underline{o}\cdot}$: 18/ENG05/056

DEPARTMENT: Mechatronics Engineering

COURSE: ENG 232 Assignment

ENG 232 QUESTIONS (WITH ANSWERS)

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

   -With the use of **hatching lines**

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

   According to British Standard 8888;

   - Dimension and extension lines are narrow continuous lines 0.35 mm thick, if possible clearly placed outside the outline of the drawing. The drawing outline must be clearly defined and in contrast with the dimensioning system.

   - The extension lines should not touch the outline of the drawing feature and a small gap should be left, about 2–3 mm, depending on the size of the drawing. The extension lines should then continue for the same distance past the dimension line.

   - Arrowheads should be approximately triangular, must be of uniform size and shape and in every case touch the dimension line to which they refer. Arrowheads drawn manually should be filled in. Arrowheads drawn by machine need not be filled in.

   - Bearing in mind the size of the actual dimensions and the fact that there may be two numbers together where limits of size are quoted, then adequate space must be left between rows of dimensions.

   - Centre lines must never be used as dimension lines but must be left clear and distinct. They can be extended, however, with the use of extension lines.

   - Dimensions are quoted in millimetres to the minimum number of significant figures. For example, 19 and not 19.0. In the case of a decimal dimension, always use a naught before the decimal marker, which might not be noticed on a drawing print that has poor line definition. We write 0.4 and not .4. It should be stated here that on metric drawings the decimal marker is a comma positioned on the base line between the figures, for example, 5,2 but never 5.2 with a decimal point midway.

   - To enable dimensions to be read clearly, figures are placed so that they can be read from the bottom of the drawing, or by turning the drawing in a clockwise direction, so that they can be read from the right-hand side.

- Leader lines are used to indicate where specific indications apply. The leader line to the hole is directed towards the centre point, terminating at the circumference in an arrow. A leader line for a part number terminates in a dot within the outline of the component. The gauge plate here is assumed to be part number six of a set of inspection gauges.

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

a.) 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. It is frequently used for symmetrical objects. Hidden lines are usually not shown on the un-sectioned half unless they are needed for clearness or for dimensioning purposes. As in all sectional drawings, the cutting plane take precedence over the centre line.

b.) When a cutting plane line passes entirely through an object, the resulting section is called a **full section**

4. How are leader lines terminated?

- with arrowhead, dot, or wavy line.

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

a.) 5:1 is an **enlarged scale** e.g when using this scale, 5mm on the drawing is 1mm (5/5) actual size

b.) 1:10 is a **reduced scale** e.g when using this scale, 1mm on the drawing is 10mm (1x10) actual size

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

a.) Diameter – Ø

b.) Radius – R

c.) Square – ☐ or ⊠

d.) Spherical Radius – SØ

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

    a. Centre Line;

- on a view and across a centre line - ₵
- in a note – CL

——————— — —————— — —————— — ———————

    b. Cutting Plane Line

    c. Long Break

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

Elements to be considered:

- Object to be projected
- The plane of projected or picture plane
- Rays or lines to sight or projectors
- The observer's eye or station point

- Orthographic projection is 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.

Elements to be considered;

8. When is a projection of an object called an orthographic projection?
An object is said to be in orthographic projection when the projection lines are perpendicular to both the plane and the outline of the object

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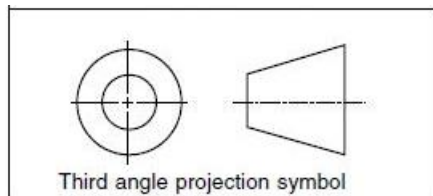
i) First Angle Projection

Projections created with the object placed in the first quadrant are said to be in First Angle projection

First angle projection symbol
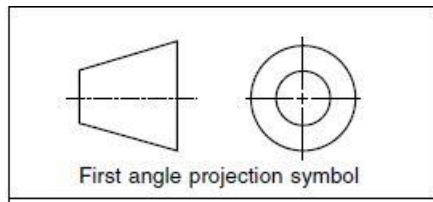
ii) Third Angle Projection

Projections created with the object placed in the third Quadrant are said to be in Third Angle projection.


Third angle projection symbol

Objectives

1. To project the auxiliary view, an imaginary plane known as **(a) Reference Plane**
2. Reference plane is parallel to the direction of view - **False**
3. Dimension of one side of the inclined surface can be **(d) Normally** projected on the reference plane
4. In isometric projection the three edges of an object are inclined to each other at - **(a) 60º**
5. The angle between the flanks of a metric thread is **a.) 60º**
6. Which one among the following represents a permanent fastener - **b) Rivet**
7. The convexity provided on the rim of the solid web cast iron pulley is called **c) Crowning**

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

8. Section lines are generally inclined with the base, at an angle of - **b)45º**
9. The isometric view of a sphere is always - **b) an ellipse**
10. In isometric projection, the four centre method is used to construct - **a) an ellipse**

11.

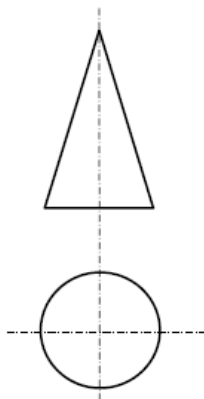(i) With respect to the elevation and plan given below, name the solid
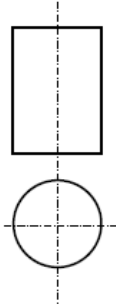
(a) Cone

(b) hexagonal prism

(c) cylinder

(d) hexagonal pyramid

12.

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

(a) Cone

(b) Cylinder

(c) Cube

(d) Frustum

13. A footstep bearing is a - **c) pivot bearing**

14. The angle between the flanks of B.S.W. thread is - **c) 55º**

15. Top view is projected on the - **d) Horizontal Plane**