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MATRIC NUMBER: 18/ENG04/068

DEPARTMENT: ELECTRICAL ENGINEERING

COURSE TITLE: ENGINEERING DRAWING

ANSWERS TO THE OBJECTIVE SECTION:

1. Reference Plane (A)
2. False (B)
3. Directly (C)
4. 120° (B)
5. 60° (A)
6. Rivet (B)
7. Crowning (C)
8. 45° (B)
9. A circle (A)
10. An ellipse (A)
11. Cylinder (C)
12. Frustrum (D)
13. Pivot bearing (C)

14. 55 (C)

15. Horizontal plane (D)

THEORY SECTION

1.) When sketching an object or part that requires a sectional view, they are drawn by eye at an angle of approximately 45 degrees, and are spaced about 1/8" apart. Since they are used to set off a section, they must be drawn with care. It is best to use the symbol for the material being shown as a section on a sketch.

2.i) Dimension and projection lines are narrow continuous lines 0.35 mm thick, if possible, clearly placed outside the outline of the drawing. As previously mentioned, the drawing outline is depicted with wide lines of 0.7 mm thick. The drawing outline will then be clearly defined and in contrast with the dimensioning system. The projection lines should not touch the drawing but a small gap should be left, about 2 to 3 mm, depending on the size of the drawing. The projection lines should then continue for the same distance past the dimension line.

ii.) 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.

iii.) 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 and a spacing of about 12 mm is recommended.

iv.) Centre lines must never be used as dimension lines but must be left clear and distinct. They can be extended, however, when used in the role of projection lines.

V.) 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 nought 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.

vi.) 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.

vii.) Leader lines are used to indicate where specific indications apply. The leader line to the hole is directed towards the centre point but terminates 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.

3a) A half-section is a view of an object showing one-half of the view in section, the diagonal lines on the section drawing are used 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.

3b) A full section is the most widely-used sectional view, 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.

4.) Leader lines are thin, solid lines that can be terminated in an arrowhead or Dot.

Arrowheads are usually solid and are from 1/8" to 1/4" long. Their length is approximately three times their width.

5.) What do you understand by (a) Scale 5:1 (b) Scale 1:10?

Scale 5:1 means the drawing will be five times in dimension of the original drawing.

Scale 10:1 means the drawing will be ten times in dimension of the original drawing.

6.) Diameter- d

ii.) Radius- r

iii.) Square- 2

iv.) Spherical Radius- S_r

7i.) Orthographic projection

ii.) Axonometric projection

iii.) Isometric projection

iv.) Oblique projection

8.) Orthographic projection is a type of 'parallel' projection in which the four orthogonal views of an object are shown. The orthographic projection commonly used in the UK is called first angle projection.

9i.) First angle projection [1] is a type of Orthographic projection used to draw 3D objects in 2D object. Symbol of First Angle projection, In 1st angle projection system, object is placed in the first quadrant and lies in between observer and plane of projection.

9ii.) In third angle projection, the observer is on the right side of the object and the orthographic view is projected on a plane located between the view point and the object. The right view is projected onto the right side of the front view and the top view is projected above the front view.

Normally when drawing in first or third angle projection a symbol is drawn which clearly shows which angle of projection has been used.