

SECTIONS OF SOLIDS

12

12-1 INTRODUCTION

It is observed that the orthographic views of a solid may contain a number of dotted lines. These lines indicate the presence of hidden details which may lie behind or somewhere in the middle of the object. The interpretation of the object's shape becomes difficult with increasing number of such lines. As a remedy, it becomes obligatory to draw sectional views for a better and easier interpretation of the internal details. The present chapter describes the methods of obtaining sectional views and other related drawing.

The object considered to be cut by a plane called a section or a cutting plane. The portion of the object, which falls between the cutting plane and the observer, is assumed to be removed. Thus the exposed internal details become visible. The projections of the remaining object are termed as sectional views.

MULTIPLE CHOICE QUESTIONS

Choose the most appropriate answer out of the given alternatives:

- i) What type of views is used to provide clarity and reveal interior features of a part?
(a) Section views (b) Oblique views (c) Auxiliary views (d) Pictorial views
- ii) A cube is resting on a face in the HP with vertical faces equally inclined to the VP. It is cut by an A.I.P. The true shape of section view is
(a) Triangle (b) Rhombus (c) Hexagon (d) Any of these
- iii) A cone is cut by a section plane parallel to the profile plane. Its true shape of section is seen in
(a) Front view (b) Top view (c) Side view (d) Auxiliary view
- iv) A square pyramid resting on its base in the HP and a side of base parallel to VP. It is cut by an A.I.P. Its true shape will be
(a) Square (b) Rectangle (c) Trapezium (d) Parallelogram
- v) A square pyramid 50 mm side resting on its base in the HP is cut by a horizontal section plane bisecting its axis. Its true shape of section is
(a) Square of 25 mm side (b) Trapezium with parallel sides 25 mm & 50 mm
(c) Square of 50 mm side (d) Triangle of base 50 mm side

- vi) A square pyramid 45 mm side and axis 60 mm long, resting on its base in the HP is cut by a horizontal section plane passing through a point on the axis 20 mm below the apex. Its true shape of section is a square of side
(a) 15 mm (b) 30 mm (c) 40 mm (d) 45 mm
- vii) A triangular prism resting on a rectangular face in the HP. It is cut by a horizontal plane. Its sectional top view is
(a) Equilateral triangle (b) Isosceles triangle
(c) Rectangle (d) None of these
- viii) A cone resting on its base on the HP is cut by a section plane parallel to VP has its sectional front view
(a) Ellipse (b) Parabola (c) Hyperbola (d) Semicircle
- ix) A cube is resting on a face in the HP with vertical faces equally inclined to the VP. It is cut by an A.I.P. passing through the solid diagonal. The true shape of section view is
(a) Square (b) Rectangle (c) Hexagon (d) Rhombus
- x) A cylinder of 50 mm diameter and axis 120 mm long is lying on its generator in HP. It is cut by a vertical section plane to get largest ellipse as the true shape of section. The major axis of this ellipse will be
(a) 50 mm (b) Between 50 mm and 120 mm
(c) 120 mm (d) 130 mm
- xi) A cylinder of 60 mm diameter and axis 80 mm long is lying on its generator in HP. It is cut by a section plane to get an ellipse as the true shape of section. The minor axis of this ellipse will be
(a) 60 mm (b) 80 mm (c) 100 mm (d) None of these
- xii) If a polyhedron is cut by any section plane, the true shape of section is a closed figure made up of
(a) Straight lines (b) Curves
(c) Combination of lines and curves (d) Any of these

Answer: (i) a (ii) d (iii) c (iv) c (v) a (vi) a (vii) c (viii) c (ix) d (x) d (xi) a (xii) a