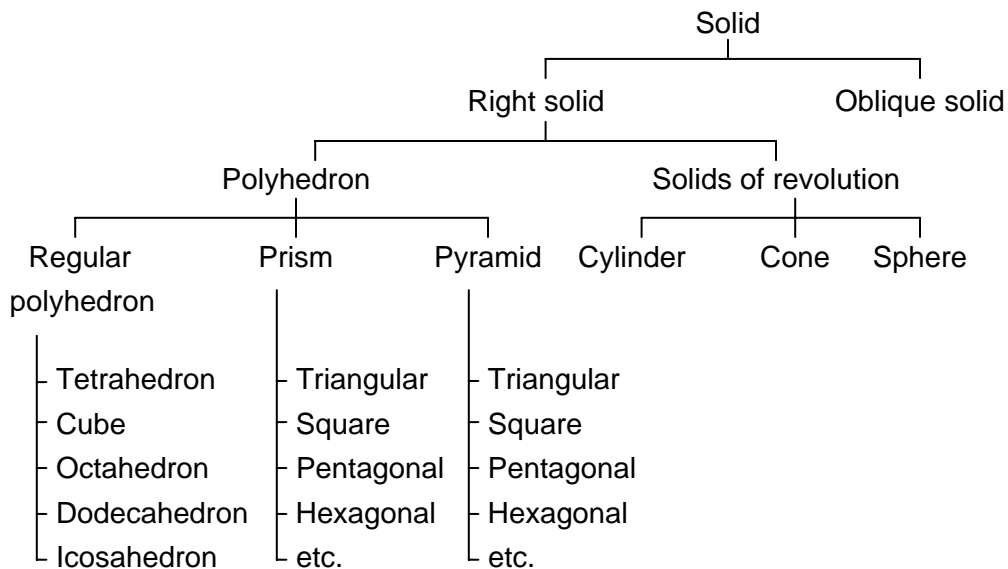# PROJECTIONS OF SOLIDS

11

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11-1 INTRODUCTION

This chapter deals with the orthographic projections of three dimensional objects called solids. However, only those solids are considered, the shape of which can be defined geometrically and are regular in nature. The basic concepts of orthographic projections discussed in earlier chapters shall also apply here.

11-2 CLASSIFICATION OF SOLIDS

Solids are usually classified as:

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                                   Solid
                        ┌────────────┴────────────┐
                   Right solid                Oblique solid
              ┌──────────┴──────────┐
          Polyhedron          Solids of revolution
       ┌──────┼──────┐         ┌──────┼──────┐
   Regular  Prism  Pyramid  Cylinder  Cone  Sphere
 polyhedron

  ├ Tetrahedron    ├ Triangular   ├ Triangular
  ├ Cube           ├ Square       ├ Square
  ├ Octahedron     ├ Pentagonal   ├ Pentagonal
  ├ Dodecahedron   ├ Hexagonal    ├ Hexagonal
  └ Icosahedron    └ etc.         └ etc.
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MULTIPLE CHOICE QUESTIONS

Choose the most appropriate answer out of the given alternatives:

i)   Among the following solids, a regular polyhedron is

(a) Square prism   (b) Square pyramid   (c) Cube   (d) Sphere

ii)   A solid having minimum number of faces is

(a) Tetrahedron   (b) Triangular prism   (c) Square pyramid   (d) cube

iii)   A pyramid is cut by a plane parallel to its base removing the apex, the remaining part is known as

(a) Truncated   (b) Frustum   (c) Sectioned   (d) Prism

iv)   Number of faces in a dodecahedron are

(a) 4   (b) 8   (c) 12   (d) 20

v)   If three orthographic views of a sphere containing a circular hole are drawn, the maximum number of circles that may appear altogether

(a) 1   (b) 3   (c) 4   (d) 6

vi)   An orthographic view of a hemisphere may appear as

(a) Circle   (b) Ellipse   (c) Parabola   (d) hyperbola

vii)   The number of stages that are necessary to get the orthographic views of a solid having its axis inclined to both the reference planes

(a) One   (b) Two   (c) Three   (d) Four

viii)   A tetrahedron is resting on its face on the HP with a side perpendicular to the VP. Its front view will be

(a) Equilateral triangle   (b) Isosceles triangle
(c) Scalene triangle   (d) Right angled triangle

ix)   A square pyramid is resting on a face in the VP. The number of dotted lines will appear in the front view

(a) One   (b) Two   (c) Three   (d) Four

x)   The solid will have two dotted lines in the top view when it is resting on its face in the HP

(a) Square pyramid   (b) Pentagonal pyramid
(c) Hexagonal pyramid   (d) All of these

xi)   A cube is resting on HP with a solid diagonal perpendicular to it. The top view will appear as

(a) Square   (b) Rectangle   (c) Irregular hexagon   (d) regular hexagon

xii)   A right circular cone resting on a point of its base circle in the HP having the axis inclined at 30⁰ to the HP and 45⁰ to the VP. The angle between the reference line and top view of the axis will be

(a) 30⁰   (b) Between 30⁰ and 45⁰   (c) 45⁰   (d) More than 45⁰

xiii)   A right circular cone resting on a generator in the HP and axis inclined at 45⁰ to the VP. The angle between the reference line and top view of the axis will be

(a) Less than 45⁰   (b) 45⁰   (c) More than 45⁰   (d) Any of these

xiv)   A cylinder rests on a point of its base circle in the HP having the axis inclined at 30⁰ to the HP and 60⁰ to the VP. The inclination of the top view of the axis with the reference line will be

(a) 30⁰   (b) 60⁰   (c) 90⁰   (d) None of these

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