Engineering Graphics Module-04 Notes

MODULE-04 TOPICS

- Sections and Sectional Views of Right Angular Solids
- Prism
- Cylinder
- Pyramid
- Cone
- Auxiliary Views
- Development of Surfaces of Solids
- Sectional Orthographic Views
- Industrial and Building Objects (Foundation to Slab)

1. SECTIONS OF SOLIDS

When a solid object is cut by an imaginary plane, the exposed internal surface is called a section.

Purpose of Sectioning

1. To show internal details clearly.
2. To reduce hidden lines.
3. To improve understanding of object.

SECTION PLANE

The imaginary plane used to cut the solid is called section plane.

Types of Section Planes

1. Plane perpendicular to HP
2. Plane perpendicular to VP
3. Plane inclined to HP
4. Plane inclined to VP

2. SECTIONAL VIEWS OF SOLIDS

Sectional view shows the internal shape obtained after cutting the solid.

Common Solids

- Prism
- Pyramid
- Cylinder
- Cone

SECTION OF PRISM

When prism is cut by section plane, sectional front view and sectional top view are drawn.

SECTION OF PYRAMID

Section plane cuts slant edges and true shape is obtained by auxiliary method.

SECTION OF CYLINDER

Section of cylinder may produce ellipse, rectangle or circle depending upon cutting plane.

SECTION OF CONE

Cone sections may form circle, ellipse, parabola or hyperbola.

3. AUXILIARY VIEWS

Auxiliary view is used to obtain true shape of section.

Applications

1. Determining true shape.
2. Solving inclined section problems.
3. Obtaining accurate dimensions.

4. DEVELOPMENT OF SURFACES

Development of surface means unfolding the surfaces of a solid on a plane.

Applications

- Sheet metal work
- Fabrication work
- Packaging industry
- Duct design

DEVELOPMENT OF PRISM

Lateral surface is unfolded into rectangular strips.

DEVELOPMENT OF PYRAMID

Triangular faces are unfolded around apex.

DEVELOPMENT OF CYLINDER

Curved surface becomes rectangle after unfolding.

DEVELOPMENT OF CONE

Curved surface becomes sector of circle.

5. SECTIONAL ORTHOGRAPHIC VIEWS

Orthographic sectional views are used to show internal structure of machine parts and building components.

Applications

1. Industrial machine parts
2. Mechanical components
3. Building structures

6. BUILDING COMPONENTS (FOUNDATION TO SLAB)

(a) Foundation
Lowest part of building transferring load to ground.

(b) Plinth
Portion between foundation and floor level.

(c) Walls
Vertical structures supporting roof/slab.

(d) Lintel
Horizontal support over doors/windows.

(e) Slab
Flat horizontal reinforced concrete structure.

7. HATCHING

Hatching lines are thin lines drawn at 45° to indicate cut surfaces.

Rules of Hatching

1. Lines should be equally spaced.
2. Use 45° inclination generally.
3. Do not cross object boundaries.

MOST IMPORTANT 14 MARK QUESTIONS

1. Draw sectional views of prism cut by section plane.

2. Draw sectional views and true shape of pyramid.

3. Draw sectional views of cylinder inclined to HP.

4. Draw sectional views of cone and obtain true shape.

5. Explain auxiliary view method for true shape.

6. Develop surfaces of prism and pyramid.

7. Develop surfaces of cylinder and cone.

8. Draw sectional orthographic view of industrial object.

9. Draw sectional view of building foundation to slab.

10. Explain hatching rules and conventions.

IMPORTANT 7 MARK QUESTIONS

1. Define section of solids.

2. Define auxiliary view.

3. Define development of surface.

4. Define sectional orthographic view.

5. Explain applications of development of surfaces.

6. Define foundation and slab.

7. Explain hatching rules.

8. Explain purpose of sectional views.

EXAM PREPARATION TIPS

• Practice sectional views regularly.
• Learn development procedures carefully.
• Use proper hatching techniques.
• Practice auxiliary views for true shape.
• Revise building component drawings regularly.

Topic Weightage Analysis

Topic	Importance
Section of Solids	★★★★★
Development of Surfaces	★★★★★
Auxiliary Views	★★★★
Sectional Orthographic Views	★★★★
Building Components	★★★
Hatching Rules	★★★