

Engineering Graphics Module-08 Notes

MODULE-08 TOPICS

- Annotations in CAD
- Layering and Layer Management
- Applying Dimensions to Objects
- Applying Annotations to Drawings
- Creating and Editing Layers
- Modifying Existing Lines (Extend/Lengthen)
- Printing Documents using Print Command
- Orthographic Projection Techniques
- Drawing Sectional Views of Composite Solids
- CAD Modeling of Parts and Assemblies
- Parametric and Non-Parametric Models
- Surface and Wireframe Models
- Part Editing and 2D Documentation
- Perspective, Isometric, Multiview, Auxiliary & Section Views
- Spatial Visualization Exercises
- Dimensioning and Tolerancing Techniques
- Dimensioning and Scale Multi Views of Dwelling

1. ANNOTATIONS IN CAD

Annotations are notes, symbols and dimensions added to engineering drawings.

Types of Annotations

1. Text annotations
2. Dimension annotations
3. Leader notes
4. Symbols and labels

Advantages

- Improves drawing clarity
- Provides technical information
- Enhances communication

2. LAYERING IN CAD

Layers are used to organize drawing components separately.

Functions of Layers

1. Control visibility
2. Manage colors and line types
3. Organize complex drawings

Creating and Editing Layers

- Create new layers
- Rename layers
- Change color and line type
- Lock and unlock layers
- Delete layers

3. APPLYING DIMENSIONS

Dimensions indicate sizes and measurements of objects.

Types of Dimensions

1. Linear Dimension
2. Angular Dimension
3. Radius Dimension
4. Diameter Dimension

4. MODIFYING EXISTING LINES

CAD provides modify tools for editing objects.

Extend Command

Used to extend lines up to selected boundary.

Lengthen Command

Used to increase or decrease line length.

5. PRINTING DOCUMENTS

Engineering drawings are printed using plot/print commands.

Printer Settings Include

1. Paper size
2. Plot scale
3. Orientation
4. Plot style

6. ORTHOGRAPHIC PROJECTION TECHNIQUES

Orthographic projection represents 3D objects in multiple 2D views.

Main Views

1. Front View
2. Top View
3. Side View

7. SECTIONAL VIEWS OF COMPOSITE SOLIDS

Composite solids are formed by combining multiple solids.

Sectional Views Show

- Internal details
- Hidden parts
- True shape of section

8. CAD MODELING OF PARTS AND ASSEMBLIES

CAD software is used for creating mechanical parts and assemblies.

Applications

1. Product design
2. Manufacturing
3. Industrial drafting

9. PARAMETRIC & NON-PARAMETRIC MODELS

Parametric Model

Dimensions and constraints control model shape.

Non-Parametric Model

Model is created without dimensional constraints.

10. SURFACE & WIREFRAME MODELS

Surface Model

Represents external surfaces of object.

Wireframe Model

Represents object using edges and lines only.

11. PART EDITING & 2D DOCUMENTATION

Editing tools modify CAD models and drawings.

Documentation Includes

1. Dimensions
2. Notes
3. Tolerances
4. Views

12. PLANAR PROJECTION THEORY

Planar projections are used for visualization of objects.

Types

1. Perspective View
2. Isometric View
3. Multiview Projection
4. Auxiliary View
5. Section View

13. SPATIAL VISUALIZATION

Spatial visualization means understanding 3D objects mentally from 2D drawings.

Importance

- Improves design understanding
- Helps in engineering drafting
- Enhances problem solving

14. DIMENSIONING GUIDELINES

1. Dimensions should be clear.
2. Avoid repetition of dimensions.
3. Use standard symbols and arrows.

4. Follow ISO standards.

15. TOLERANCING TECHNIQUES

Tolerance defines permissible variation in dimensions.

Types

1. Unilateral tolerance
2. Bilateral tolerance
3. Geometric tolerance

16. MULTIVIEW DRAWINGS OF DWELLINGS

Dwelling drawings include plan, elevation and sectional views with dimensions and scale.

MOST IMPORTANT 14 MARK QUESTIONS

1. Explain annotations and dimensioning in CAD.
2. Explain layering and layer management in CAD.
3. Explain extend and lengthen commands with examples.
4. Explain orthographic projection techniques.
5. Draw sectional views of composite solids.
6. Explain CAD modeling of parts and assemblies.
7. Explain parametric and non-parametric models.
8. Explain surface and wireframe models.
9. Explain perspective, isometric and multiview projections.
10. Explain dimensioning and tolerancing techniques.
11. Explain printing and plotting methods in CAD.
12. Explain spatial visualization techniques in engineering graphics.

IMPORTANT 7 MARK QUESTIONS

1. Define annotation.
2. Define layer in CAD.
3. Define parametric model.
4. Define wireframe model.
5. Explain extend and lengthen commands.
6. Explain sectional views.
7. Define spatial visualization.
8. Explain tolerancing techniques.

9. Define multiview projection.

10. Explain dimensioning guidelines.

EXAM PREPARATION TIPS

- Practice CAD layer management regularly.
- Learn dimensioning and annotation properly.
- Revise orthographic and sectional views.
- Practice CAD modeling basics.
- Learn projection and visualization techniques carefully.

Topic Weightage Analysis

Topic	Importance
Layering & CAD Tools	★★★★★
Orthographic & Sectional Views	★★★★★
Dimensioning & Tolerancing	★★★★
CAD Modeling	★★★★
Projection Techniques	★★★★
Spatial Visualization	★★★