Chapter 10 – AutoCAD 3D

Part I: Short Questions

Q1. Write 05 AutoCAD keyboard shortcuts?

- **L** → Line
- **C** → Circle
- **E** → Erase
- **EX** → Extend
- **TR** → Trim

Q2. Define AutoCAD 3D.

- AutoCAD 3D is the process of creating **three-dimensional models and objects** (length, width, and height).
- Provides realistic visualization and 3D modeling for engineering, architecture, and product design.

Q3. What is the objective of Extrude command?

- Converts **2D shapes into 3D solids** by adding height or depth.

Q4. What is the objective of Polyline command?

- Creates a connected series of line and arc segments as a **single object**, useful in 2D base sketches for 3D modeling.

Q5. Enlist Basic 3D commands of AutoCAD.

- **EXTRUDE** – Creates 3D solids.
- **REVOLVE** – Rotates a profile around axis to create 3D object.
- **SWEEP** – Extends a shape along a path.
- **LOFT** – Creates smooth 3D objects between profiles.
- **UNION / SUBTRACT / INTERSECT** – Boolean operations on 3D solids.

Q6. Define Extrude & Sweep Command.

- **Extrude:** Creates a 3D solid from a 2D shape by giving thickness/height.
- **Sweep:** Creates a 3D solid by moving a shape along a path.

Q7. Define Union & Subtract command.

- **Union (UNI):** Combines two or more 3D solids into one.
- **Subtract (SU):** Removes one 3D solid from another.

✅ Part II: Long Questions

Q1. Describe AutoCAD 3D commands.

- **Extrude:** Converts 2D into 3D by adding height.
- **Revolve:** Creates 3D objects by revolving a 2D profile around an axis.
- **Sweep:** Moves a shape along a predefined path.
- **Loft:** Connects multiple cross-sections to create smooth solids.
- **Union, Subtract, Intersect:** Boolean operations for combining and modifying 3D solids.
- **3D Rotate, 3D Mirror, 3D Align:** Modify orientation and position of 3D objects.

Q2. Describe How to create 3D building in AutoCAD.

1. Draw 2D floor plan using **Line / Polyline**.
2. Create walls by using **EXTRUDE** command.
3. Add doors and windows by **SUBTRACT** command.
4. Create roof using **POLYLINE + EXTRUDE** or **LOFT**.
5. Use **UNION** to combine objects.
6. Apply **materials, hatching, and rendering** for realistic visualization.

Q3. Describe any 10 AutoCAD keyboard shortcuts.

1. **L** – Line
2. **C** – Circle
3. **E** – Erase
4. **TR** – Trim
5. **EX** – Extend
6. **O** – Offset
7. **CO** – Copy
8. **M** – Move
9. **RO** – Rotate
10. **REC** – Rectangle

Q4. Describe How to create 3D Drawing.

1. Start a new drawing and set **3D workspace**.
2. Draw 2D shapes (Rectangle, Circle, Polyline).
3. Use **EXTRUDE, REVOLVE, SWEEP, or LOFT** to make 3D solids.
4. Apply **Union/Subtract/Intersect** to modify solids.
5. Use **3D Rotate/Move** to adjust objects.
6. Add **materials, lights, and rendering** for visualization.

Extra Important Questions (Exam Practice)

Q1. Differentiate between Extrude and Revolve.

- **Extrude:** Extends 2D profile into 3D straight height.
- **Revolve:** Creates 3D object by rotating profile around an axis.

Q2. Difference between Sweep and Loft.

- **Sweep:** Moves a profile along a single path.
- **Loft:** Connects multiple profiles into smooth 3D objects.

Q3. What are Boolean operations in AutoCAD 3D?

- Union, Subtract, and Intersect operations used to combine or modify 3D solids.

Q4. Difference between 2D and 3D AutoCAD.

- **2D:** Length + Width only (flat drawings).
- **3D:** Length + Width + Height (realistic models).