



School of General Education
Session: 2021-22 (Summer Semester)
B. Voc. Program, 3rd Semester,
End-Sem. Examination

Set A

Course Code: GEN1308

Time: 2 Hours

Course Name: Basic of AutoCAD and SolidWorks

Max. Marks: 50

Instruction:

1. Answer all questions from section – A, each question carries one mark.
2. Attempt all questions from section – B, each question carries four marks.
3. Answer all questions from section – C, each question carries six marks.

Section – A

10X01 = 10 Marks

Q1. AutoCAD was developed by:

- a. Microsoft Inc.
- b. Apple Inc.
- c. Autodesk Inc.
- d. None of the above.

Q2. Which of the following workspaces are available in AutoCAD?

- a. 3D Basics.
- b. 3D Modeling.
- c. Drafting and Annotation.
- d. All of the above.

Q3. To obtain parallel lines, concentric circles and parallel curves _____ is used.

- a. Copy.
- b. Fillet.
- c. Offset.
- d. None of the above.

Q4. What are the advantages of AutoCAD?

- a. Improve the quality of design.
- b. Increase the productivity if designer.
- c. Creates drawing with accuracy and quickly.
- d. All of the above.



Q5. _____ key automatically activates the O snap feature of AutoCAD.

- a. F1.
- b. F2.
- c. F3.
- d. F4.

Q6. What does AutoCAD stand for?

- a. Automatical Computer Aided Design.
- b. Automated Computer Application Design.
- c. Automatic Computer Aided Data.
- d. None of the above.

Q7. By which of the following command, you can draw a rectangle in AutoCAD?

- a. ARC.
- b. POL.
- c. REC.
- d. CO.

Q8. Which of the following command in AutoCAD is used to create multiple viewports in the layout?

- a. EATTEDIT.
- b. VPORTS.
- c. QSELECT.
- d. GROUP.

Q9. What is the command to create a sphere in AutoCAD?

- a. S.
- b. Spe.
- c. Sh.
- d. Sphere.

Q10. "Xrefs" command is used to:

- a. Import small drawings for reference.
- b. Import data from saved files.
- c. Import large drawings for reference.
- d. None of the above.



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Section – B

04X04 = 16 Marks

- Q11. What do you understand by parametric constraints?
Q12. Explain circle command in detail with a suitable drawing.
Q13. What do you understand by clipping command in AutoCAD?
Q14. Explain Solid Primitives of AutoCAD 3D?

Section – C

04X06 = 24 Marks

- Q15. Explain the role & responsibilities of an AutoCAD designer.
Q16. Explain Solid Editing.
Q17. Explain the following commands:
a. Sweep.
b. Intersect.
c. Interfere.
Q18. What do you understand by 3D operation in an AutoCAD? Explain about rotating, aligning & mirroring an object in AutoCAD 3D.

Vijin



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Section – A

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Q1. AutoCAD was developed by:

Answer: c. Autodesk Inc.

Q2. Which of the following workspaces are available in AutoCAD?

Answer: d. All of the above.

Q3. To obtain parallel lines, concentric circles and parallel curves _____ is used.

Answer: c. Offset.

Q4. What are the advantages of AutoCAD?

Answer: d. All of the above.

Q5. _____ key automatically activates the O snap feature of AutoCAD.

Answer: c. F3.

Q6. What does AutoCAD stand for?

Answer: a. Automatic Computer Aided Design.

Q7. By which of the following command, you can draw a rectangle in AutoCAD?

Answer: c. REC.

Q8. Which of the following command in AutoCAD is used to create multiple viewports in the layout?

Answer: b. VPORTS.

Q9. What is the command to create a sphere in AutoCAD?

Answer: d. Sphere.

Q10. "Xrefs" command is used to:

Answer: c. Import large drawings for reference.



Q11. What do you understand by parametric constraints?

Answer:

Parametric drawing can be defined as a technology that is used for designing with constraints. Constraints are defined as restrictions and associations that are applied to 2D geometry. There are two types of constraints: **geometric and dimensional**. Geometric constraints are used to control the relationships of objects in respect to each other. Dimensional constraints are used to control the distance, angle, radius and length values of objects.

A blue cursor icon will always display when you move your cursor over an object that has constraints applied to it. Constraints provide a way to enforce requirements when looking at different designs or when making changes in the design phase of a project. With constraints you can:

- Include formulas and equations within dimensional constraints
- Maintain design requirements and specifications by constraining the geometry within a drawing
- Instantly apply multiple geometric constraints to objects
- Change the value of a variable to make design changes quickly.

Q12. Explain circle command in detail with a suitable drawing.

Answer:

Creates a circle.



Find

The following prompts are displayed.

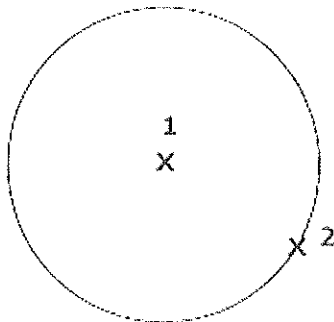
Centre Point

Creates a circle based on a centre point and a radius or diameter value.

Radius

Enter a value, or specify a point.

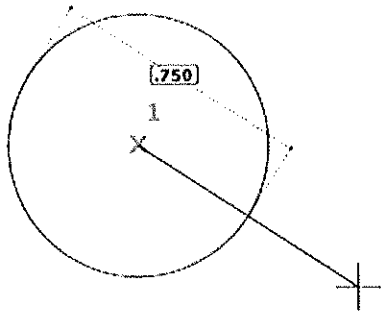
For example:



Diameter

Enter a value, or specify a second point.

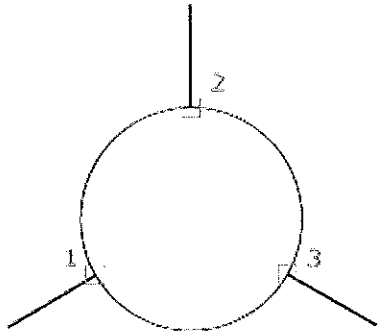
For example:



3P (Three Points)

Creates a circle based on three points on the circumference.

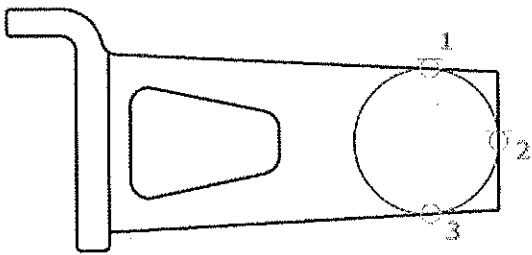
For example:



Tan, Tan, Tan

Creates a circle tangent to three objects.

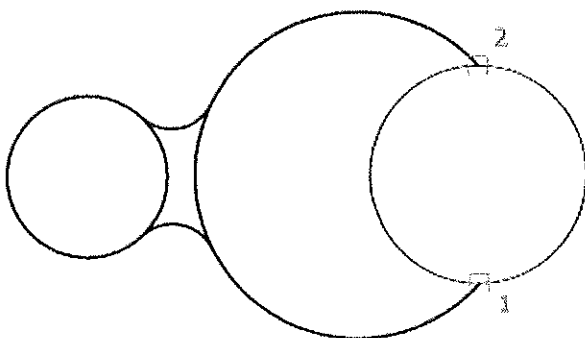
For example:



2P (Two Points)

Creates a circle based on two endpoints of the diameter.

For example:



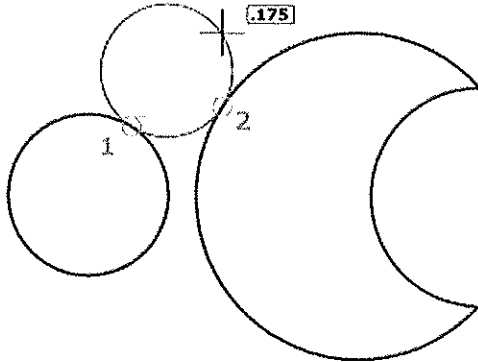


TTR (Tangent, Tangent, Radius)

Creates a circle with a specified radius and tangent to two objects.

Sometimes more than one circle matches the specified criteria. The program draws the circle of the specified radius whose tangent points are closest to the selected points.

For example:



Q13. What do you understand by clipping command in AutoCAD?

Answer:

Command: Xclip or Clip.

Alias: Clip

Insert Tab -> Reference Panel -> Clip.

Use: Xrefs are frequently used to import large drawings for reference or backgrounds. Multiple Xrefs, such as floor plan, column grid layout, and site-plan drawing, might be combined into one file. One drawback to multiple Xrefs in earlier versions of AutoCAD was that the entire Xref was loaded into memory even if only a small portion of it was used for final plotted output.

Procedure:

Step 1: XCLIP <enter> or select "Clip" from reference panel.

Step 2: Select the XREF to which you want to apply the XCLIP <enter>.

Step 3: N <enter> for new boundary.

Step 4: Then select an option for generating the border for the XCLIP.

Step 5: "Select Polyline" = select an existing polyline that defines the border of the XCLIP.

Step 6: "Polygonal" = lets you create a closed polyline.

Step 7: "Rectangular" = Pick 2 Points to define the Xclip border.

Q14. Explain Solid Primitives of AutoCAD 3D?

Answer:

Solid Primitives are the 3D objects which are easily draw by modeling panel.

Shape	Command	Description
Box	Box	Creates a solid box after you provide 2 opposite corners.
Sphere	Sphere	Creates a solid sphere from a center point and radius.
Cylinder	Cylinder	Creates a straight cylinder from a center point, radius and height.



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Cone	Cone	Creates a tapered cone from a center point, radius and height.
Wedge	Wedge	Creates a triangular wedge from 2 opposite points.
Torus	Torus	Creates a torus (donut shape) based on center point, radius and tube radius.

Section – C

04X06 = 24 Marks

Q15. Explain the role & responsibilities of an AutoCAD designer.

Answer:

CAD is the primary way in which drafters develop plans, drawings and sketches. Using AutoCAD software, created by Autodesk Inc., drafters prepare a visual depiction of a product to be constructed. Production and construction workers, including engineers, surveyors, architects and scientists, use CAD images to create plans to build and manufacture everything from buildings to toys to spacecraft. CAD drafters also have a working knowledge of traditional drafting methods.

There are many specialty areas in drafting, such as aeronautical, architectural, electrical and mechanical drafting. AutoCAD drafter's duties vary depending on their area of expertise. Drafters use CAD software to produce detailed drawings that include building dimensions, required materials and construction procedures. They use multiple angles and views to depict the association of components and systems. Drafters often consult with co-workers on design and layouts.

In some cases, drafters coordinate with builders to establish requirements and understand design concepts. When deficiencies occur, drafters revise designs to eliminate problems. Entry-level drafters work under the direction of supervisors.

Most drafters complete postsecondary training through a technical school or community college, which usually offer 1-year or 2-year programs in the field. Since few 4-year degree programs in drafting exist, drafters who want to pursue bachelor's degrees may major in a related field, such as engineering, architecture or mathematics. Technical school training is typically focused on the specific skills necessary for drafting, while community colleges require more general education courses in addition to drafting classes.

Drafters should be able to visually communicate concepts, draw well and be very detailed. The American Design Drafting Association (ADDA) offers professional certification for those wishing to demonstrate professional capabilities.

Q16. Explain Solid Editing.

Answer:

The solid-editing tools are options of a single AutoCAD command called Solidedit.

Types of solid editing commands:

1. Slice.
2. Extrude face.
3. Taper face.
4. Move face.



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5. Delete face.
6. Offset face.
7. Copy face.
8. Rotate face.
9. Color face.
10. Extract edges.
11. Imprint.
12. Color edge.
13. Copy edge.
14. Separate.
15. Shell.
16. Clean.
17. Check.
18. Convert to surface.
19. Thicken.
20. Convert to solid.

Q17. Explain the following commands:

- a. Sweep.
- b. Intersect.
- c. Interfere.

Answer:

Sweep: This command is used to form a 2D object into 3D in a way through the axis associated with the object to be in shape. This axis can be in the form of a line or polyline, and the axis is usually called the path.

Intersect: This command is used to create a new solid from the intersecting volume of two or more solids or regions.

Interfere: This command is used to create a temporary 3D solid from the interferences between two sets of selected 3D objects.

Q18. What do you understand by 3D operation in an AutoCAD? Explain about rotating, aligning & mirroring an object in AutoCAD 3D.

Answer: Three-Dimensional model that displays a picture or item in a form that appears to be physically present with a designated structure. Essentially, it allows items that appeared flat to the human eye to be display in a form that allows for various dimensions to be represented. These dimensions include width, height & depth.

3D Rotate: to rotate 3D objects. By this command you can rotate 3D objects around all three axes (X, Y, Z). 3D rotates depend upon right hand thumb rule.

3D Align: to align two 3D objects to each other. You can specify one, two or three points for the source object. Then, you can specify one, two, or three points for the destination.

3D Mirror: to make mirror copy of 3D objects.

Vijay



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Self (B)

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Instruction:

1. Answer all questions from section – A, each question carries one mark.
2. Attempt all questions from section – B, each question carries four marks.
3. Answer all questions from section – C, each question carries six marks.

Section – A

10X01 = 10 Marks

Q1. The primary difference between the Model tab and the Layout tab(s) is ____.

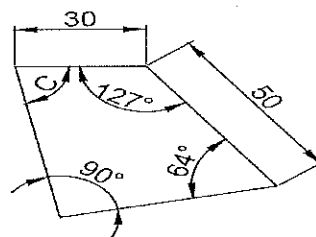
- a) the Model tab is used for drawing in 3D and a Layout is used for drawing in 2D.
- b) the Model tab is where you create the drawing and a Layout tab represents the sheet that you will plot or print on.
- c) the color of the background.
- d) the Model tab displays the drawing you are copying from and the Layout tab is where you lay out the new drawing.

Q2. If the following actions are taken (*Dynamic input, turned OFF*)

1. Write **CIRCLE** and hit Enter
2. Write **0,0** and hit Enter
3. Write **D** and hit Enter
4. Write **20** and hit Enter, then what of the following will happen?
 - a) AutoCAD will draw a circle of R=20.
 - b) AutoCAD will draw a circle of R=10 and the center of the circle will be placed at 0,0.
 - c) AutoCAD will draw a circle of D=10 and the center of the circle will be placed at 0,0.
 - d) None of the above.

Q3. What is the value of C in the following image?

- a) 70°.
- b) 69°.
- c) 79°.
- d) 88°.





Q4. To print the entire project, you will choose to regulate what to plot:

- a. Display.
- b. Extends.
- c. Limits.
- d. Window.

Q5. Polar coordinates are used mostly for drawing:

- a. Arc.
- b. Ellipse.
- c. Angular Lines.
- d. None of the above.

Q6. Which of the following is NOT a property of an object?

- a. Line Weight.
- b. Measure.
- c. Hyperlink.
- d. Elevation.

Q7. When drawing is in 2D, what axis you NOT work with?

- a. X.
- b. Y.
- c. Z.
- d. WCS.

Q8. "Xrefs" command is used to:

- a. Import small drawings for reference.
- b. Import data from saved files.
- c. Import large drawings for reference.
- d. None of the above.

Q9. What is the command to create a sphere in AutoCAD?

- a. S.
- b. Spe.
- c. Sh.
- d. Sphere.

Q10. In _____ option you will create base of the cylinder by specifying three points.

- a. 1P.
- b. 3P.
- c. 2P.
- d. None of the above.



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Section – B

04X04 = 16 Marks

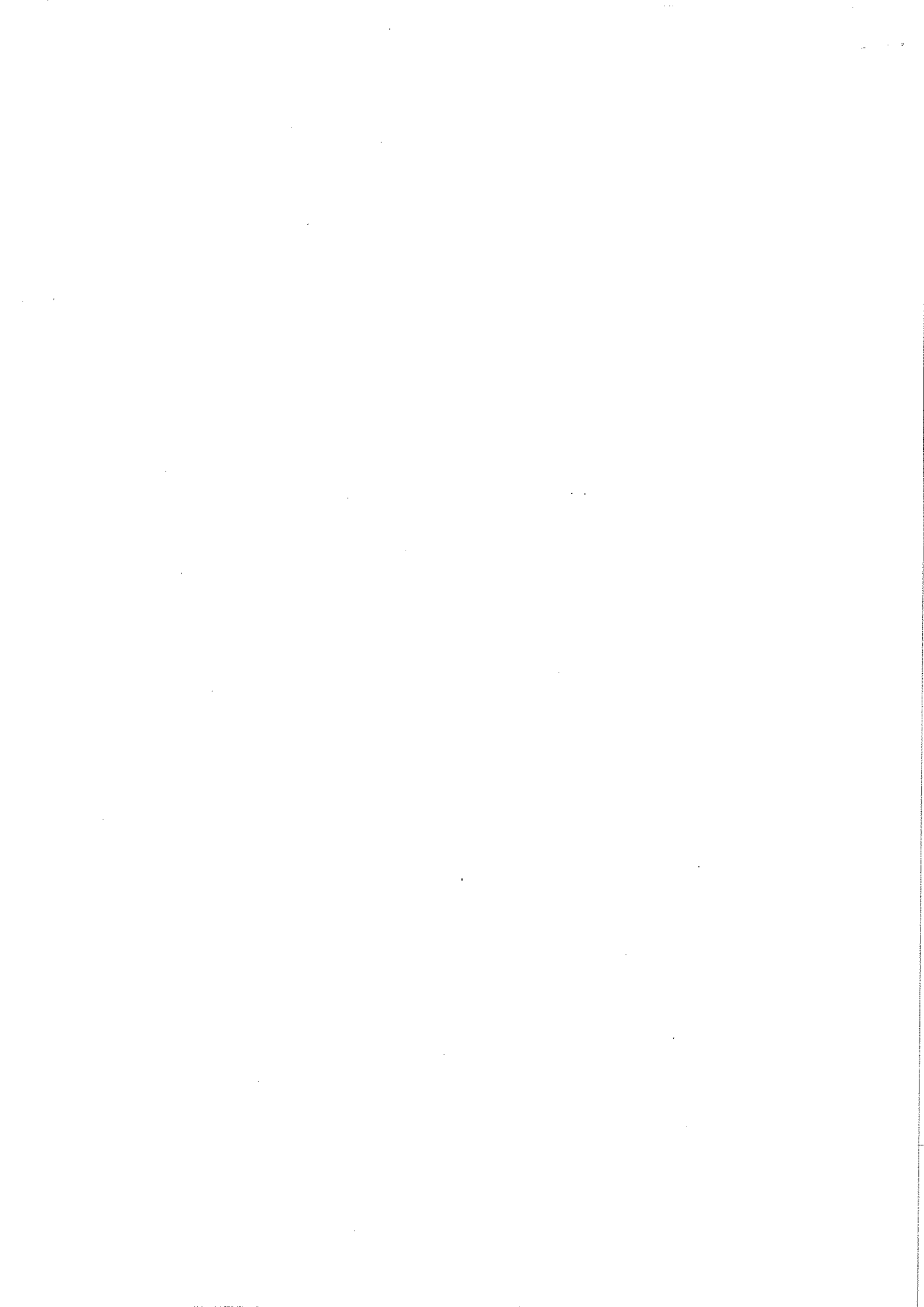
- Q11. Explain the setup required for AutoCAD designing at your workplace.
- Q12. Explain Cylinder command in detail with a suitable drawing.
- Q13. How can an object be sliced through slice command? Explain the process of slicing.
- Q14. Explain the six-methods through which Circle can be created in AutoCAD?

Section – C

04X06 = 24 Marks

- Q15. Explain the role & responsibilities of an AutoCAD designer.
- Q16. Explain Solid Primitives in details.
- Q17. Explain the following commands:
- Extrude.
 - Loft.
 - Revolve.
- Q18. Differentiate between Union and Subtract commands in detail.

Vijay





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Answer Key

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Section – A

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Q1. The primary difference between the Model tab and the Layout tab(s) is _____.

Answer: b. the Model tab is where you create the drawing and a Layout tab represents the sheet that you will plot or print on.

Q2. If the following actions are taken (*Dynamic input, turned OFF*)

1. Write **CIRCLE** and hit Enter
2. Write **0,0** and hit Enter
3. Write **D** and hit Enter
4. Write **20** and hit Enter, then what of the following will happen?

Answer: b. AutoCAD will draw a circle of R=10 and the center of the circle will be placed at 0,0.

Q3. What is the value of C in the following image?

Answer: c. 79.

Q4. To print the entire project, you will choose to regulate what to plot:

Answer: c. Limits.

Q5. Polar coordinates are used mostly for drawing:

Answer: c. Angular Lines.

Q6. Which of the following is NOT a property of an object?

Answer: b. Measure.

Q7. When drawing is in 2D, what axis you NOT work with?

Answer: c. Z.

Q8. "Xrefs" command is used to:

Answer: c. Import large drawings for reference.



System requirements for AutoCAD 2020 including Specialized Toolsets (Windows)

Pointing Device	MS-Mouse compliant
.NET Framework	.NET Framework Version 4.7 or later
	*DirectX11 recommended by supported OS

Q12. Explain Cylinder command in detail with a suitable drawing.

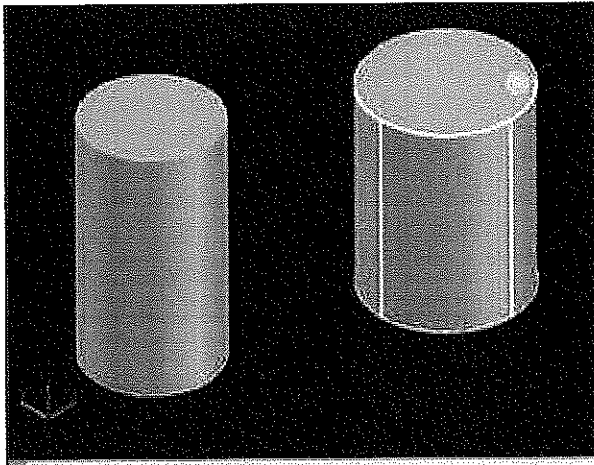
Answer:

Command: Cylinder

Alias: CYL

Home Tab -> Modeling Panel -> Cylinder.

Use: To create cylinder. Creating one is very similar to creating a circle, except that you are giving depth to it.



Methods to create cylinder:

1. 3P.
2. 2P.
3. Ttr.

There are two options related to height of cylinder:

1. 2Point.
2. Axis Endpoint.

Q13. How can an object be sliced through slice command? Explain the process of slicing.

Answer:

Use: We can slice a 3D solid just like we were using a knife.

Process by 3 Points:

SL <↵

SLICE

Select objects to slice: select box by any selection method

Select objects to slice: <↵



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Specify start point of slicing plane of [planar object/ surface/ Z axis/ View/ XY/ YZ/ ZX/ 3 Points]

<3points>: 3 <┘

Specify first point on plane: mouse click (P1)

Specify second point on plane: mouse click (P2)

Specify third point on plane: mouse click (P3)

Specify a point on desired side or [keep both sides]: mouse click (P4)

Q14. Explain the six-methods through which Circle can be created in AutoCAD?

Answer:

1. Centre radius: Draws a circle based on a centre point and a radius.
2. Centre diameter: Draws a circle based on a centre point & a diameter.
3. 3 Point: Draw a circle based on three points on the circumference.
4. 2 Point: Draw a circle based on two endpoints of the diameter.
5. TTR (Tangent, Tangent, Radius): Draws a circle with a specified radius tangent to two objects.
6. TTT (Tan, Tan, Tan): Draws a circle tangent to three objects.

Section – C

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Q15. Explain the role & responsibilities of an AutoCAD designer.

Answer:

CAD is the primary way in which drafters develop plans, drawings and sketches. Using AutoCAD software, created by Autodesk Inc., drafters prepare a visual depiction of a product to be constructed. Production and construction workers, including engineers, surveyors, architects and scientists, use CAD images to create plans to build and manufacture everything from buildings to toys to spacecraft. CAD drafters also have a working knowledge of traditional drafting methods.

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In some cases, drafters coordinate with builders to establish requirements and understand design concepts. When deficiencies occur, drafters revise designs to eliminate problems. Entry-level drafters work under the direction of supervisors.

Most drafters complete postsecondary training through a technical school or community college, which usually offer 1-year or 2-year programs in the field. Since few 4-year degree programs in drafting exist, drafters who want to pursue bachelor's degrees may major in a related field, such as engineering, architecture or mathematics. Technical school training is



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typically focused on the specific skills necessary for drafting, while community colleges require more general education courses in addition to drafting classes.

Drafters should be able to visually communicate concepts, draw well and be very detailed. The American Design Drafting Association (ADDA) offers professional certification for those wishing to demonstrate professional capabilities.

Q16. Explain Solid Primitives in details.

Answer:

Solid Primitives are the 3D objects which are easily draw by modeling panel.

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Cone	Cone	Creates a tapered cone from a center point, radius and height.
Wedge	Wedge	Creates a triangular wedge from 2 opposite points.
Torus	Torus	Creates a torus (donut shape) based on center point, radius and tube radius.
Polysolid	Polysolid	Draws a solid object with width and height as would draw a polyline.

Q17. Explain the following commands:

- Extrude.
- Loft.
- Revolve.

Answer:

- Extrude: To use unique solid primitive by extruding existing two-dimensional objects. You can extrude multiple objects with EXTRUDE.
- Loft: To create 3D solid or surface in the space between several cross section.
- Revolve: To create a 3D solid object or 3D surface object by revolving an object around an axis.

Q18. Differentiate between Union and Subtract commands in detail.

Answer:

Union is used to join two or more solids in to creating one based on the total geometry of all, while subtract is used to cut away, or remove the volume of one object from another.

Vijay

