**Assessment TESTS**

**SLO #1**

 1. Of what does a mesh model consist?

 2. What is another term for *mesh models*?

 3. What are *tessellation divisions*?

 4. When creating a mesh primitive, when should mesh tessellation divisions be set?

 5. For what is the **Mesh Primitive Options** dialog box used?

 6. How is a mesh box created?

 7. How is a mesh sphere created?

 8. How is a mesh torus created?

 9. List the four commands used to create mesh forms.

 10. What is the purpose of the **DELOBJ** system variable?

 11. Which command converts a mesh object to a surface object?

 12. Which command converts a mesh object to a solid object?

 13. Describe the smoothness of a mesh object.

 14. Which command is used to convert an existing solid or surface to a mesh object?

 15. Name the system variable that controls the maximum level of smoothness attained with the **MESHSMOOTHMORE** command.

 16. List two ways to decrease the smoothness of a mesh.

 17. What happens to the mesh when you refine it?

 18. How many types of subobjects does a mesh have? List them.

 19. Which keyboard key is used to select subobjects for editing?

 20. What is a *context-sensitive panel*?

2-

 1. How do you select a standard isometric preset view using the view cube?

 2. How is a standard orthographic view displayed using the view cube?

 3. What is the difference between *parallel projection* and *perspective projection*?

 4. What happens when one of the four view cube compass letters is picked?

 5. Which command generates a continuous 3D orbit?

 6. Which command can be used to produce a view that is parallel to the XY plane of the current UCS?

 7. What is a *steering wheel*?

 8. Briefly describe how to use a steering wheel.

 9. The principal tool in the Tour Building wheel is the **Forward** tool. What is the purpose of this tool?

 10. What are the three principal navigation tools found in the navigation bar?

3-

 1. Explain *spherical coordinate entry*.

 2. Explain *cylindrical coordinate entry*.

 3. A new point is to be drawn 4.5″ from the last point. It is to be located at a 63° angle in the XY plane, and at a 35° angle from the XY plane. Write the proper spherical coordinate notation.

 4. Write the proper cylindrical coordinate notation for locating a point 4.5″ in the horizontal direction from the origin, 3.6″ along the Z axis, and at a 63° angle in the XY plane.

 5. Name the command that is used to draw 3D polylines.

 6. Why is the command in question 5 needed?

 7. Which command option is used to change a 3D polyline into a B-spline curve?

 8. What is the *WCS*?

 9. What is a *user coordinate system (UCS)*?

 10. What effect does the **Show UCS Icon at Origin** option have on the UCS icon display?

 11. Describe how to rotate the UCS so that the Z axis is tilted 30° toward the WCS X axis.

 12. How do you return to the WCS from any UCS?

 13. Which command controls the display of the user coordinate system icon?

 14. What system variable controls the display of grips on the UCS icon? In which dialog box can it be set?

 15. Briefly describe how to access the **Move and Align** option using the UCS icon grips.

 16. How can you return to a previous UCS configuration using the UCS icon?

 17. What is a *dynamic UCS* and how is one activated?

 18. What is the function of the **3 Point** option of the **UCS** command?

 19. How do you automatically create a display that is plan to a new UCS?

4-

 1. What is an *extrusion?*

 2. How do you create a surface extrusion?

 3. Briefly describe how to create a solid extrusion.

 4. Which command can be used to convert circles and closed polylines with a thickness to solids?

 5. How can an extrusion be constructed to extend below the XY plane of the current UCS?

 6. What is the range in which a taper angle can vary?

 7. How can a curved extrusion be constructed?

 8. Which system variable allows you to delete or retain the original extruded objects and path definitions?

 9. How is the height of an extrusion applied in relation to the original object?

 10. Which option of the **PLANESURF** command can be used to convert a closed object into a surface?

 11. What is a *surface revolution*?

 12. What are the five different options for selecting the axis of revolution for a revolved solid?

 13. How can a given profile be revolved twice (or more) about the same axis in order to create different shaped solids?

 14. Which option of the **REVOLVE** command controls the type of object created when the command is used on a circle?

 15. What mathematical expression would be used to revolve a profile 90° less than the angular dimensional constraint named ang4?

5-

 1. What is a *loft*?

 2. What option of the **SWEEP** command determines whether the sweep will be a solid or a surface?

 3. When using the **SWEEP** command, on which endpoint of the path does the sweep start?

 4. What is the purpose of the **Base point** option of the **SWEEP** command?

 5. After the sweep or loft is created, how may the creation options be changed?

 6. Which objects may be used as a sweep path?

 7. How is the alignment of a sweep set to be perpendicular to the start of
the path?

 8. Which **SWEEP** command option is used to taper the sweep?

 9. What is the difference between the **Ruled** and **Smooth Fit** options in the **LOFT** command?

 10. What does the **Bank** option of the **LOFT** command do?

 11. How can you close a loft?

 12. List five objects that may be used as guide curves in a loft.

 13. What are the four rules that must be followed when using guide curves?

 14. When using the **Path** option of the **LOFT** command, what must the path intersect?

 15. How can a loft be created so it tapers to a point at its end?

6-

1. Which properties of a solid can be changed in the **Properties** palette?

 2. What does the History property control?

 3. What is the preferred command for aligning objects to create an assembly of parts?

 4. How does the **3DALIGN** command differ from the **ALIGN** command?

 5. How does the **3DROTATE** command differ from the **ROTATE** command?

 6. How does the **MIRROR3D** command differ from the **MIRROR** command?

 7. Which command allows you to create a rectangular array by defining rows, columns, and levels?

 8. How does a 3D polar array differ from a 2D polar array?

 9. Which option of the **ARRAYPATH** command can be used to evenly distribute the arrayed object along the path?

 10. Which command is used to fillet a 3D object?

 11. Which command is used to chamfer a 3D object?

 12. What is the preferred command to convert a mesh into a solid?

 13. Name four types of surfaces that can be used to slice objects.

 14. Briefly describe the function of the **SLICE** command.

 15. Which **SLICE** command option would be used to create a contoured solid object like a computer mouse?

 16. Which two commands can be used to create a countersink?

**SLO #2**

1**-**

 1. Which properties of a solid can be changed in the **Properties** palette?

 2. What does the History property control?

 3. What is the preferred command for aligning objects to create an assembly of parts?

 4. How does the **3DALIGN** command differ from the **ALIGN** command?

 5. How does the **3DROTATE** command differ from the **ROTATE** command?

 6. How does the **MIRROR3D** command differ from the **MIRROR** command?

 7. Which command allows you to create a rectangular array by defining rows, columns, and levels?

 8. How does a 3D polar array differ from a 2D polar array?

 9. Which option of the **ARRAYPATH** command can be used to evenly distribute the arrayed object along the path?

 10. Which command is used to fillet a 3D object?

 11. Which command is used to chamfer a 3D object?

 12. What is the preferred command to convert a mesh into a solid?

 13. Name four types of surfaces that can be used to slice objects.

 14. Briefly describe the function of the **SLICE** command.

 15. Which **SLICE** command option would be used to create a contoured solid object like a computer mouse?

 16. Which two commands can be used to create a countersink?

2-

 1. Name the two basic types of surface models in AutoCAD.

 2. Which type of surface is created when the **SURFACEMODELINGMODE** system variable is set to 0?

 3. What is an *associative surface*?

 4. Which system variable determines whether a surface model is associative when created?

 5. When editing the shape of an associative surface, what should be selected to maintain the surface associativity?

 6. What is a *network surface*?

 7. What two system variables set the number of isolines displayed in the U and V directions of a surface model?

 8. What is the purpose of the **SURFBLEND** command?

 9. What are the three options used to define surface continuity? What is the result of using each option?

 10. Define *bulge magnitude*.

 11. What is the purpose of the **SURFPATCH** command?

 12. What is the purpose of the **SURFOFFSET** command?

 13. How do you create a new solid when using the **SURFOFFSET** command?

 14. What are the two creation type options available when using the **SURFEXTEND** command? What is the purpose of each option?

 15. What are the three object types that can be used as cutting objects when trimming a surface?

 16. What are the two basic ways to create a NURBS surface?

 17. What command is used to display control vertices on a NURBS surface?

 18. What command can be used to convert a 2D line or polyline into a surface model?

 19. What is the purpose of the **THICKEN** command and which type of object does it create?

 20. What is the preferred command to convert a watertight series of surfaces into a solid?

3-

 1. How do you select a subobject?

 2. How do you deselect a subobject?

 3. When grip editing, two types of grips appear on the object. Name the two types of grips.

 4. If you have a cylinder primitive with a height of 10 units, but the height requirement has changed to 15 units, explain the procedure for adding 5 units to the cylinder height.

 5. How can you change the radius of a fillet or the distances of a chamfer?

 6. When moving a face on a solid primitive, how can you accurately control the axis of movement?

 7. When moving a face on a solid primitive, which option maintains the planes of adjacent faces while modifying the size of the face?

 8. Describe a major difference of function between the **ROTATE** and **3DROTATE** commands.

 9. Which system variable enables you to use the **3DROTATE** command in a 3D view even if you select the **ROTATE** command?

 10. How does the location and shape of an edge grip differ from a face grip?

 11. What is the most efficient tool to use when rotating an edge and how is it displayed?

 12. What is the only type of edge that can be scaled?

 13. What is the only editing function that can be done when editing a single vertex?

 14. How are two or more vertices selected for editing?

 15. What is created when offsetting an edge of a solid with the **OFFSETEDGE** command?

 16. Which option of the **OFFSETEDGE** command is used to create round corners on the resulting offset object?

 17. What is the function of the **PRESSPULL** command?

 18. On which types of surfaces or objects can the **PRESSPULL** command be used?

4-

 1. What three components of a solid model can be edited using the **SOLIDEDIT** command?

 2. When using the **SOLIDEDIT** command, how many faces are highlighted if you pick an edge?

 3. How do you deselect a face that is part of the selection set when using the **SOLIDEDIT** command?

 4. How can you select a single face?

 5. Name the objects that can be used as the path of extrusion when extruding a face.

 6. What is one of the most useful aspects of the **Offset Faces** option?

 7. How do positive and negative offset distance values affect the volume of the solid?

 8. How is a single object, such as a cylinder, affected by entering a positive taper angle when using the **Taper Faces** option?

 9. When a shape is imprinted onto a solid body, which component of the solid does the imprinted object become and how can it be used?

 10. What is the purpose of the **XEDGES** command?

 11. How does the **Shell** option affect a solid that contains internal features such as holes, grooves, and slots?

 12. How can you determine if an object is a valid 3D solid?

 13. Describe two ways to change the view of your model while you are inside of a command.

 14. How can you extrude a face in a straight line, but not perpendicular to the face?

**SLO #3**

1- 1. Which AutoCAD system variable is used to control the display of a silhouette edge on a model?

 2. Which option of the **VIEWBASE** command is used to change the default view when placing the base view?

 3. Explain how to change the default projection used by AutoCAD when placing drawing views.

 4. Explain two ways to place a projected view.

 5. To what value should the **DIMASSOC** system variable be set in order to dimension drawing views with associative dimensions?

 6. What does the **SECTIONPLANE** command create?

 7. How is the **Face** option of the **SECTIONPLANE** command used?

 8. Which option of the **SECTIONPLANE** command is used to create sections with jogs?

 9. When a section object is created by picking a face or two points or using the **Orthographic** option of the **SECTIONPLANE** command, which section object state is established?

 10. Which section object grips are used to accomplish the following tasks?

A. Change the section object state.

B. Lengthen or shorten the section object segment.

C. Rotate the section view 180°.

 11. How is live sectioning turned on or off?

 12. Which category in the **Section Settings** dialog box provides control over the material that is removed by the section object?

 13. What are the two types of section view blocks that can be created from a section object?

 14. Which command should be used first, **SOLDRAW** or **SOLVIEW**?

 15. Which option of the **SOLVIEW** command is used to create an orthographic view?

 16. Name the layer(s) that the **SOLVIEW** command automatically create(s).

 17. Which layer(s) in Question 16 should you avoid drawing on?

 18. Which command can automatically complete a section view using the current settings of **HPNAME**, **HPSCALE**, and **HPANG**?

 19. What is the function of the **MASSPROP** command?

 20. What is the extension of the ASCII file that can be created by **MASSPROP**?

2-

 1. What is the **Visual Styles Manager**?

 2. Name the 10 default AutoCAD visual styles that can be edited in the **Visual Styles Manager**.

 3. Describe the difference between setting the Lighting quality property to Smooth and Faceted.

 4. What does the Desaturate setting of the Color property do?

 5. What has to be added to a scene before full shadows are displayed?

 6. If you want to make your scene look hand sketched, but the Line Extensions and Jitter properties are not available, what other setting(s) do you have to change?

 7. How do you set a visual style to display silhouette edges?

 8. List the four settings for the Jitter property.

 9. What is an *intersection edge*?

 10. How do you make your own visual styles available in other drawings?

3-

 1. Define *material*.

 2. Define *materials library*.

 3. What is the My Materials section of the **Libraries** area of the materials browser used for?

 4. Describe how to attach a material using the materials browser.

 5. How can materials be attached to layers?

 6. By default, which material is attached to newly created objects?

 7. Which material is used as the base material for creating new materials?

 8. Name the 12 shapes that can be used to display the material in the preview in the materials editor.

 9. How do you know if a material in the materials browser is being used in the drawing?

 10. How can the name of an existing material be changed?

4-

 1. Compare and contrast *ambient light*, *distant lights*, *point lights*, *spotlights*, and *weblights*.

 2. Define *angle of incidence*.

 3. Define *angle of reflection*.

 4. A smooth surface has a(n) \_\_\_\_\_ specular factor.

 5. Describe *hotspot* and *falloff*. Which lights have these properties?

 6. What is *attenuation*?

 7. What are the three types of lighting in AutoCAD?

 8. What are the four types of light objects in AutoCAD?

 9. What are light glyphs and which lights have them?

 10. List the types of shadows that can be created in AutoCAD. Which type(s) can have soft edges?

5-

 1. Describe the three panes of the Render window.

 2. What are the three possible destinations for render output?

 3. Once a rendering is completed and displayed in the Render window, how can it be saved to a file?

 4. List the render presets AutoCAD provides.

 5. What is sampling and what do the properties in the Sampling subcategory in the Advanced Render Settings palette control?

 6. Raytracing calculates shadows, \_\_\_\_\_, and \_\_\_\_\_.

 7. How does global illumination simulate bounced light?

 8. What is the benefit of final gathering?

 9. For what is the Energy multiplier property in the Light Properties subcategory in the Advanced Render Settings palette used?

 10. For what are the properties in the Diagnostic category of the Advanced Render Settings palette used?

6-

 1. Which system variable controls the display of camera glyphs?

 2. Name the three camera tools available on the **Cameras** tool palette and explain the differences between them.

 3. When is the **Camera Preview** window displayed, by default?

 4. From where is the offset distance for the camera clipping planes measured?

 5. What is the difference between the **3DWALK** and **3DFLY** commands?

 6. How do you “steer” your movement when creating a walkthrough or flyby animation?

 7. What is the *field of view*?

 8. What is the purpose of the **Position Indicator** palette?

 9. In the **Walk and Fly Settings** dialog box, which settings combine to control the speed of the animation?

 10. How do you start recording a walkthrough or flyby?

**SLO #4**

1-

 1. List three methods used to open the **Options** dialog box.

 2. List the tabs found in the **Options** dialog box.

 3. You have created two folders under the C: drive named \Projects and \Symbols. You want to store your drawings in the \Projects folder and your blocks in the \Symbols folder. What should you enter in the Support File Search Path area so these folders are added to the search path?

 4. How do you open the **Drawing Window Colors** dialog box to change the color of AutoCAD screen elements?

 5. For which AutoCAD features can you customize the font (not the font within a drawing)?

 6. In which tab of the **Options** dialog box can you change settings for layout tabs?

 7. Briefly describe how to turn on the automatic save feature and specify the save interval.

 8. How do you select the folder in which the autosave file is saved?

 9. What are the advantages of toggling the log file open?

 10. Name the two commands that toggle the log file on and off.

2-

 1. What is an *interface element* in AutoCAD?

 2. Which command is used to access the **Customize User Interface** dialog box?

 3. In which pane of the **Customize User Interface** dialog box can you find all predefined commands?

 4. How do you add a command to an interface element?

 5. How do you remove a command from an interface element?

 6. How can you copy a command to a new location on a different interface element?

 7. What is a *partial CUIx file*?

 8. Briefly describe how to create a custom command.

 9. What is an *extended help file*?

 10. Name the four drawing tools that are provided in the **Button Editor** dialog box.

3-

 1. Name three ways to open the **Tool Palettes** window.

 2. How do you dock the **Tool Palettes** window?

 3. When enabled, what does the autohide feature do to the **Tool Palettes** window? How is the **Tool Palettes** window accessed when autohide is enabled?

 4. Name two ways to toggle the autohide feature on the **Tool Palettes** window.

 5. Describe how anchoring the **Tool Palettes** window differs from using the autohide feature or docking it.

 6. How do you activate the transparency feature for the **Tool Palettes** window?

 7. Name the three view styles in which tools can be displayed in the **Tool Palettes** window.

 8. How do you create a new, blank tool palette?

 9. How do you add a tool palette that contains all of the blocks in a particular drawing?

 10. Which dialog box must be open to create a tool on a tool palette from a toolbar button? How is it opened?

**SLO #5**

1**-**

 1. What is the standard extension used for AutoLISP program files?

 2. A comment is indicated in an AutoLISP file with a(n) \_\_\_\_\_.

 3. When in the drawing area, what are three ways to load the contents of the AutoLISP file named chgtext.lsp that is saved in the support file search path?

 4. Define the terms *integer* and *real number* as related to AutoLISP.

 5. Write expressions in the proper AutoLISP format for the following arithmetic functions.

A. 23 + 54

B. 12.45 + 6.28

C. 56 – 34

D. 23.004 – 7.008

E. 16 × 4.6

F. 7.25 × 10.30

G. 45 ÷ 23

H. 147 ÷ 29.6

I. 53 + (12 × 3.8)

J. 567 ÷ (34 – 14)

 6. Explain the purpose of the **(setq)** function.

 7. Write the proper AutoLISP notation to assign the value of (67 – 34.5) to the variable **num1**.

 8. What does the **(getpoint)** function allow you to do?

 9. Which AutoLISP functions allow you to find the distance between two points? Describe the difference between the two functions.

 10. Explain the purpose of the **(getstring)** function.

 11. Write the proper AutoLISP notation for assigning the string This is a test: to the variable **TXT**.

 12. How do you allow spaces in a string of text when using the **(getstring)** function?

 13. Write the proper notation for using the **PLINE** command in an AutoLISP expression.

 14. Which prefix must you enter before a function name in an expression to indicate it is accessible at the Command: prompt?

 15. What is a *function definition*?

 16. Define an *argument*.

 17. Which AutoLISP function is used to create new AutoCAD commands?

 18. What is the purpose of the **Visual LISP Editor**?

 19. When entering text in the **Visual LISP Editor**, which color indicates that you have entered a built-in function or a protected symbol?

 20. Explain the purpose of the **\n** text string in AutoLISP.

2-

 1. Name the function that allows you to return a real number and use it as a variable value.

 2. Which two functions allow you to work with system variables?

 3. Define the following AutoLISP functions.

A. **(car)**

B. **(cadr)**

C. **(cdr)**

D. **(caddr)**

E. **(list)**

 4. Write the proper AutoLISP notation to return the last two atoms of the list (4 7 3) as a list.

 5. Write an expression to set a variable named **A** to the result of Question 4.

 6. Write an expression to return the second atom of the list created in Question 5.

 7. Compare and contrast the **(getangle)** and **(getorient)** functions.

 8. Write an expression to set the angle between points **P3** and **P4** to the variable **A**.

 9. Which system of angular measurement does AutoLISP use?

 10. Explain the purpose of the **(polar)** function.

3-

 1. What are the two types of files that must be created to construct a functioning dialog box?

 2. When referring to a dialog box, what is a *tile*?

 3. When defining a dialog or tile, inside of which character are all of the required attributes for a tile definition placed?

 4. Which symbol indicates a comment inside of a DCL file?

 5. Write the appropriate notation for the first line of a DCL file that defines a dialog box named **Test**.

 6. Write the appropriate notation in a DCL file that defines the text in the title bar of a dialog box named **Select Application**.

 7. Write the notation in a DCL file for defining a cluster of four buttons labeled **OK**, **Next**, **Cancel**, and **Help**.

 8. Write the notation that would appear in a LSP file that loads a dialog file named **PICKFILE**.

 9. What is a *key* in a DCL file?

 10. Write the proper DCL file notation for the first line that identifies a button.