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**MATRIC NO: 16/ENG03/021**

**DEPT: CIVIL ENGINEERING**

**COURSE NAME: CIVIL ENGINEERING DRAWING**

**COURSE CODE: CVE 312**

**CARRY OVER STUDENT**

TEST 2 ANSWERS

* My Responsibilies in completion of Mr Lawrence building:

1. I will undertake a proper site planning and investigation on the new land to understand the perimeter of the land, and foundation that suit the soil.
2. Plan and design the building structures, following construction and government standards, using design software and drawing tools.
3. Preparation of reports and back bending schedules
4. Perform the setting-out of the building.
5. Supervision of the site work on concrete cast and laying of reinforcement.
6. I will take up the role of safety engineer and ensure that the work carried out by the workers and other related activities are as per the safety regulation of the respective state or area.
7. Undergo activities and practices that comply with the client and the specification of the plan.
8. I make sure I’m punctual in time and made the workers punctual
9. Day to day work and material bought should be noted and the estimation of projects should be done correctly.
10. Assures the work is completed and delivered without any defect and delay.

* Differences between architectural and civil engineering drawing

|  |  |
| --- | --- |
| Architectural drawing   1. Architectural drawings describe the masonry works, wall finishing details (plastering, painting, tiling etc. ), floor finishing details(tiling, raised floor system, grano flooring for machines etc. …), ceiling finishing details, door, window opening locations and dimensions. 2. If you want to know the size of room, location of bath room, toilets, lifts. Where will the garden, where will the cupboard TV etc. you go see an architectural drawing. | Civil engineering drawing   1. Civil drawings describe the key layout, framing plan, dimensions of every elements, sections, reinforcement details and construction sequence of the structure to be built. 2. The location of columns, beams, thickness of slab, how much concrete you gonna need, how much steel it will consume, how the rooms will be constructed, how the building will rise, you go see a Civil engineering drawing. |

|  |  |
| --- | --- |
| BEME   1. BEME is a document which lists all the items necessary for the complete construction of civil engineering works. 2. Each item includes a description and estimated measure or quantity (BOQ). 3. Engineers use BEME | Bill of quantities   1. Bill of quantities gives brief identifying descriptions on the items in the BEME. 2. Bill of quantities gives estimated quantities of works to be done. 3. Bill of quantities serves as an approximate checklist for the successful contractor in ordering materials and assessing his requirement of labour. 4. Contractors use BOQ |

|  |  |
| --- | --- |
| Section   1. Section is the view obtained after cutting the structure, for example sectional view of a room cut into two will show us the thickness of the wall, may be the doors and windows. Sectional view also depends on from which view you are seeing the structure. it can be a top view or a side view. | Elevation   1. Elevation is a view, which is how you see or view a side of a structure when you are standing in the front, back and side. |

|  |  |
| --- | --- |
| Working drawing   1. The purpose of working drawing is to show how the design of a structure is to be materialized. 2. Working drawing are neatly arranged and systematically numbered, clear, simple, and clean. 3. Working drawings may include tones, hatches to emphasize different materials. | Presentation drawing   1. In presentation drawing the main focus in this drawing is it visual appeal (Attractiveness). 2. Presentation drawing includes people, vehicles and tree. |

* SITE PLANNING
* Site planning is a design tool used to determine an appropriate development outcome, based on an analysis of the development site’s constraints. The opportunities and constraints inherent to a site and the response to a program/design brief are analyzed and documented in an overall site planning document that should accompany a development application.
* Good site planning therefore starts with a comprehensive analysis of the site, within the immediate and regional context. The “whole of site” approach encompasses broader decisions regarding building orientation/ placement on site, including location of associated structures and infrastructure such as access and circulation arrangements.
* TYPES OF PAPER SIZE

The most common A paper sizes are:

**A3: 297 x 410 mm**

A3 paper is quite large. It is possible to buy A3 photocopy paper, though not all photocopiers/printers can handle it. It is typically used for:

* small posters
* drawings
* artwork

**A4: 210 x 297 mm**

A4 is the most commonly used International paper size. This is the size used for most:

* photocopy paper
* business letters
* legal/official documents
* student notepads
* brochures, flyers

Note that some items (brochures for example) may be A4 in size but actually made from A3 paper folded in two.

**A5: 148 x 210 mm**

A5 paper is half the size of A4. This is the size of many:

* private letters, invitations
* commercial memos
* small notepads
* organizers, diaries
* small brochures, flyers
* greetings cards

Note that some items (greetings cards for example) may be A5 in size but actually made from A4 paper folded in two.

**A6: 105 x 148 mm**

A6 is half the size of A5 and quarter the size of A4. It is often used in card form rather than paper, and is the size of many:

* invitation cards
* greetings cards

**Other A sizes**

Sizes larger than A3 exist but are rarely used by the general public. Sizes smaller than A6 (A7, A8 etc.) exist for such things as very small notepads, visiting cards etc.

| **Some Common ISO Paper Sizes: A Series** | | |
| --- | --- | --- |
| **format** | **size in millimeters** | **size in inches** |
| A2 | 420 x 594 | 16.5 x 23.4 |
| A3 | 297 x 420 | 11.7 x 16.5 |
| A4 | 210 x 297 | 8.3 x 11.7 |
| A5 | 148 x 210 | 5.8 x 8.3 |
| A6 | 105 x 148 | 4.1 x 5.8 |
| A7 | 74 x 105 | 2.9 x 4.1 |

TYPES OF STAIRCASE

Some of the most common types of stair geometry include:

**Straight**

Generally the most prevalent type of stairs, straight [stairs](https://www.designingbuildings.co.uk/wiki/Stairs) comprise a single linear [flight](https://www.designingbuildings.co.uk/wiki/Flight) which does not change direction.

Where there are more than 36 [risers](https://www.designingbuildings.co.uk/wiki/Riser) in consecutive [flights](https://www.designingbuildings.co.uk/wiki/Flight) of [stairs](https://www.designingbuildings.co.uk/wiki/Stairs), [Approved Document K](https://www.designingbuildings.co.uk/wiki/Approved_Document_K) requires that there is at least one change of direction, with a [landing](https://www.designingbuildings.co.uk/wiki/Landing) that has a minimum length equal to the width of the [stairs](https://www.designingbuildings.co.uk/wiki/Stairs).

**Quarter-turn**

Quarter-turn, or L-shaped, [stairs](https://www.designingbuildings.co.uk/wiki/Stairs) comprise a straight [flight](https://www.designingbuildings.co.uk/wiki/Flight) of [stairs](https://www.designingbuildings.co.uk/wiki/Stairs) that makes a 90-degree turn after a [landing](https://www.designingbuildings.co.uk/wiki/Landing). This type can be considered safer than a straight [staircase](https://www.designingbuildings.co.uk/wiki/Staircase) since the [landing](https://www.designingbuildings.co.uk/wiki/Landing) reduces the number of [treads](https://www.designingbuildings.co.uk/wiki/Tread) in one [flight](https://www.designingbuildings.co.uk/wiki/Flight) and provides a [place](https://www.designingbuildings.co.uk/wiki/Place) to rest.

**Winder**

This type of stairs is similar to a quarter-turn [staircase](https://www.designingbuildings.co.uk/wiki/Staircase), but consists of winders which are wedge-shaped [treads](https://www.designingbuildings.co.uk/wiki/Tread), wider on one side than the other. Winders allow a turn by 90-degrees (single winder) or 180-degrees (double winder).

**Half-turn**

Half-turn, or U-shaped, [stairs](https://www.designingbuildings.co.uk/wiki/Stairs) comprise two straight [flights](https://www.designingbuildings.co.uk/wiki/Flight) of [stairs](https://www.designingbuildings.co.uk/wiki/Stairs) that make a 180-degree turn having been separated by a [landing](https://www.designingbuildings.co.uk/wiki/Landing).

**Spiral**

This type of stair is a compact [design](https://www.designingbuildings.co.uk/wiki/Design) with [flights](https://www.designingbuildings.co.uk/wiki/Flight) resembling a circle (or part of a circle), and centered around a single vertical [column](https://www.designingbuildings.co.uk/wiki/Column). Similar to winder [stairs](https://www.designingbuildings.co.uk/wiki/Stairs), the [treads](https://www.designingbuildings.co.uk/wiki/Tread) are wedge-shaped but differ in that they are all uniformly sized (except the final one).

Although [spiral stairs](https://www.designingbuildings.co.uk/wiki/Spiral_stair) are often considered to be aesthetically pleasing and effective in terms of [space](https://www.designingbuildings.co.uk/wiki/Space), they may not be the most convenient in terms of frequent use as the [treads](https://www.designingbuildings.co.uk/wiki/Tread) can often be less easy or [safe](https://www.designingbuildings.co.uk/wiki/Safe) to traverse than other types of stairs.

**Helical**

A [helical stair](https://www.designingbuildings.co.uk/wiki/Helical_stair) similar to a [spiral stair](https://www.designingbuildings.co.uk/wiki/Spiral_stair), but the helix wraps around a central void rather than a [column](https://www.designingbuildings.co.uk/wiki/Column).

**Curved**

Also known as arched [stairs](https://www.designingbuildings.co.uk/wiki/Stairs), this type of stair comprises a continuous [flight](https://www.designingbuildings.co.uk/wiki/Flight) that is shaped like an [arch](https://www.designingbuildings.co.uk/wiki/Arches), with no [landings](https://www.designingbuildings.co.uk/wiki/Landing). The [treads](https://www.designingbuildings.co.uk/wiki/Tread) are wedge-shaped similar to winder [stairs](https://www.designingbuildings.co.uk/wiki/Stairs). Although achieving an elegant [aesthetic](https://www.designingbuildings.co.uk/wiki/Aesthetics), curved [stairs](https://www.designingbuildings.co.uk/wiki/Stairs) are difficult to [construct](https://www.designingbuildings.co.uk/wiki/Construct) since all basic [details](https://www.designingbuildings.co.uk/wiki/Details), [banisters](https://www.designingbuildings.co.uk/wiki/Banister), and so on, need to be curved.

AUTOCAD AND ITS COMMANDS

AutoCAD is a [commercial](https://en.wikipedia.org/wiki/Commercial_software) [computer-aided design](https://en.wikipedia.org/wiki/Computer-aided_design) (CAD) and [drafting](https://en.wikipedia.org/wiki/Technical_drawing) software application. AutoCAD is used in industry, by architects, project managers, engineers, graphic designers, city planners and other professionals.

Below, you'll find an abbreviated list of commands that can be used in AutoCAD.

**Toggle General Features**

|  |  |
| --- | --- |
| Ctrl+G | Toggle Grid |
| Ctrl+E | Cycle isometric planes |
| Ctrl+F | Toggle running object snaps |
| Ctrl+H | Toggle Pick Style |
| Ctrl+Shift+H | Toggle Hide pallets |
| Ctrl+I | Toggle Coords |
| Ctrl+Shift+I | Toggle Infer Constraints |

**Manage Screen**

|  |  |
| --- | --- |
| Ctrl+0 (zero) | Clean Screen |
| Ctrl+1 | Property Palette |
| Ctrl+2 | Design Center Palette |
| Ctrl+3 | Tool Palette |
| Ctrl+4 | Sheet Set Palette |
| Ctrl+6 | DBConnect Manager |
| Ctrl+7 | Markup Set Manager Palette |
| Ctrl+8 | Quick Calc |
| Ctrl+9 | Command Line |

**Manage Drawings**

|  |  |
| --- | --- |
| Ctrl+N | New Drawing |
| Ctrl+S | Save drawing |
| Ctrl+O | Open drawing |
| Ctrl+P | Plot dialog box |
| Ctrl+Tab | Switch to next |
| Ctrl+Shift+Tab | Switch to previous drawing |
| Ctrl+Page Up | Switch to previous tab in current drawing |
| Ctrl+Page Down | Switch to next tab in current drawing |
| Ctrl+Q | Exit |
| Ctrl+Shift+S | Save drawing as |

**Toggle Drawing Modes**

|  |  |
| --- | --- |
| F1 | Display Help |
| F2 | Toggle text screen |
| F3 | Toggle object snap mode |
| F4 | Toggle 3DOsnap |
| F5 | Toggle Isoplane |
| F6 | Toggle Dynamic UCS |
| F7 | Toggle grid mode |
| F8 | Toggle ortho mode |
| F9 | Toggle snap mode |
| F10 | Toggle polar mode |
| F11 | Toggle object snap tracking |
| F12 | Toggle dynamic input mode |

**Manage Workflow**

|  |  |
| --- | --- |
| Ctrl+A | Select all objects |
| Ctrl+C | Copy object |
| Ctrl+K | Insert hyperlink |
| Ctrl+X | Cut object |
| Ctrl+V | Paste object |
| Ctrl+Shift+C | Copy to clipboard with base point |
| Ctrl+Shift+V | Paste data as block |
| Ctrl+Z | Undo last action |
| Ctrl+Y | Redo last action |
| Ctrl+[ | Cancel current command (or ctrl+\) |
| ESC | Cancel current command |

A, B, C

**A**

|  |  |
| --- | --- |
| A | ARC / Creates an arc |
| ADC | ADCENTER / Manages and inserts content such as blocks, xrefs, and hatch patterns |
| AA | AREA / Calculates the area and perimeter of objects or of defined areas |
| AL | ALIGN / Aligns objects with other objects in 2D and 3D |
| AP | APPLOAD / Load Application |
| AR | ARRAY / Creates multiple copies of objects in a pattern |
| ARR | ACTRECORD / Starts the Action Recorder |
| ARM | ACTUSERMESSAGE / Inserts a user message into an action macro |
| ARU | ACTUSERINPUT / Pauses for user input in an action macro |
| ARS | ACTSTOP / Stops the Action Recorder and provides the option of saving the recorded actions to an action macro file |
| ATI | ATTIPEDIT / Changes the textual content of an attribute within a block |
| ATT | ATTDEF / Redefines a block and updates associated attributes |
| ATE | ATTEDIT / Changes attribute information in a block |

**B**

|  |  |
| --- | --- |
| B | BLOCK / Creates a block definition from selected objects |
| BC | BCLOSE / Closes the Block Editor |
| BE | BEDIT / Opens the block definition in the Block Editor |
| BH | HATCH / Fills an enclosed area or selected objects with a hatch pattern, solid fill, or gradient fill |
| BO | BOUNDARY / Creates a region or a polyline from an enclosed area |
| BR | BREAK / Breaks the selected object between two points |
| BS | BSAVE / Saves the current block definition |
| BVS | BVSTATE / Creates, sets, or deletes a visibility state in a dynamic block |

**C**

|  |  |
| --- | --- |
| C | CIRCLE / Creates a circle |
| CAM | CAMERA / Sets a camera and target location to create and save a 3D perspective view of objects |
| CBAR | CONSTRAINTBAR / A toolbar-like UI element that displays the available geometric constraints on an object |
| CH | PROPERTIES / Controls properties of existing objects |
| CHA | CHAMFER / Bevels the edges of objects |
| CHK | CHECKSTANDARDS / Checks the current drawing for standards violations |
| CLI | COMMANDLINE / Displays the Command Line window |
| COL | COLOR / Sets the color for new objects |
| CO | COPY / Copies objects a specified distance in a specified direction |
| CT | CTABLESTYLE / Sets the name of the current table style |
| CUBE | NAVVCUBE / Controls the visibility and display properties of the ViewCube tool |
| CYL | CYLINDER / Creates a 3D solid cylinder |

D, E, F

**D**

|  |  |
| --- | --- |
| D | DIMSTYLE / Creates and modifies dimension styles |
| DAN | DIMANGULAR / Creates an angular dimension |
| DAR | DIMARC / Creates an arc length dimension |
| DBA | DIMBASELINE / Creates a linear, angular, or ordinate dimension from the baseline of the previous or selected dimension |
| DBC | DBCONNECT / Provides an interface to external database tables |
| DCE | DIMCENTER / Creates the center mark or the centerlines of circles and arcs |
| DCO | DIMCONTINUE / Creates a dimension that starts from an extension line of a previously created dimension |
| DCON | DIMCONSTRAINT / Applies dimensional constraints to selected objects or points on objects |
| DDA | DIMDISASSOCIATE / Removes associativity from selected dimensions |
| DDI | DIMDIAMETER / Creates a diameter dimension for a circle or an arc |
| DED | DIMEDIT / Edits dimension text and extension lines |
| DI | DIST / Measures the distance and angle between two points |
| DIV | DIVIDE / Creates evenly spaced point objects or blocks along the length or perimeter of an object |
| DJL | DIMJOGLINE / Adds or removes a jog line on a linear or aligned dimension |
| DJO | DIMJOGGED / Creates jogged dimensions for circles and arcs |
| DL | DATALINK / The Data Link dialog box is displayed |
| DLU | DATALINKUPDATE / Updates data to or from an established external data link |
| DO | DONUT / Creates a filled circle or a wide ring |
| DOR | DIMORDINATE / Creates ordinate dimensions |
| DOV | DIMOVERRIDE / Controls overrides of system variables used in selected dimensions |
| DR | DRAWORDER / Changes the draw order of images and other objects |
| DRA | DIMRADIUS / Creates a radius dimension for a circle or an arc |
| DRE | DIMREASSOCIATE / Associates or re-associates selected dimensions to objects or points on objects |
| DRM | DRAWINGRECOVERY / Displays a list of drawing files that can be recovered after a program or system failure |
| DS | DSETTINGS / Sets grid and snap, polar and object snap tracking, object snap modes, Dynamic Input, and Quick Properties |
| DT | TEXT / Creates a single-line text object |
| DV | DVIEW / Defines parallel projection or perspective views by using a camera and target |
| DX | DATAEXTRACTION / Extracts drawing data and merges data from an external source to a data extraction table or external file |

**E**

|  |  |
| --- | --- |
| E | **ERASE** / Removes objects from a drawing |
| ED | **DDEDIT** / Edits single-line text, dimension text, attribute definitions, and feature control frames |
| EL | **ELLIPSE** / Creates an ellipse or an elliptical arc |
| EPDF | **EXPORTPDF** / Exports drawing to PDF |
| ER | **EXTERNALREFERENCES** / Opens the External References palette |
| EX | **EXTEND** / Extends objects to meet the edges of other objects |
| EXIT | **QUIT** / Exits the program |
| EXP | **EXPORT** / Saves the objects in a drawing to a different file format |
| EXT | **EXTRUDE** / Extends the dimensions of a 2D object or 3D face into 3D space |

**F**

|  |  |
| --- | --- |
| F | **FILLET** / Rounds and fillets the edges of objects |
| FI | **FILTER** / Creates a list of requirements that an object must meet to be included in a selection set |
| FS | **FSMODE** / Creates a selection set of all objects that touch the selected object |
| FSHOT | **FLATSHOT** / Creates a 2D representation of all 3D objects based on the current view |

G, H, I

**G**

|  |  |
| --- | --- |
| G | GROUP / Creates and manages saved sets of objects called groups |
| GCON | GEOCONSTRAINT / Applies or persists geometric relationships between objects or points on objects |
| GD | GRADIENT / Fills an enclosed area or selected objects with a gradient fill |
| GEO | GEOGRAPHICLOCATION / Specifies the geographic location information for a drawing file |

**H**

|  |  |
| --- | --- |
| H | HATCH / Fills an enclosed area or selected objects with a hatch pattern, solid fill, or gradient fill |
| HE | HATCHEDIT / Modifies an existing hatch or fill |
| HI | HIDE / Regenerates a 3D wireframe model with hidden lines suppressed |

**I**

|  |  |
| --- | --- |
| I | INSERT / Inserts a block or drawing into the current drawing |
| IAD | IMAGEADJUST / Controls the image display of the brightness, contrast, and fade values of images |
| IAT | IMAGEATTACH / Inserts a reference to an image file |
| ICL | IMAGECLIP / Crops the display of a selected image to a specified boundary |
| ID | ID / Displays the UCS coordinate values of a specified location |
| IM | IMAGE / Displays the External References palette |
| IMP | IMPORT / Imports files of different formats into the current drawing |
| IN | INTERSECT / Creates a 3D solid, surface, or 2D region from overlapping solids, surfaces, or regions |
| INF | INTERFERE / Creates a temporary 3D solid from the interferences between two sets of selected 3D solids |
| IO | INSERTOBJ / Inserts a linked or embedded object |

J, K, L

**J**

|  |  |
| --- | --- |
| J | JOIN / Joins similar objects to form a single, unbroken object |
| JOG | DIMJOGGED / Creates jogged dimensions for circles and arcs |

**K**

**L**

|  |  |
| --- | --- |
| L | LINE / Creates straight line segments |
| LA | LAYER / Manages layers and layer properties |
| LAS | LAYERSTATE / Saves, restores, and manages named layer states |
| LE | QLEADER / Creates a leader and leader annotation |
| LEN | LENGTHEN / Changes the length of objects and the included angle of arcs |
| LESS | MESHSMOOTHLESS / Decreases the level of smoothness for mesh objects by one level |
| LI | LIST / Displays property data for selected objects |
| LO | LAYOUT / Creates and modifies drawing layout tabs |
| LT | LINETYPE / Loads, sets, and modifies linetypes |
| LTS | LTSCALE / Changes the scale factor of linetypes for all objects in a drawing |
| LW | LWEIGHT / Sets the current lineweight, lineweight display options, and lineweight units |

M, N, O

**M**

|  |  |
| --- | --- |
| M | MOVE / Moves objects a specified distance in a specified direction |
| MA | MATCHPROP / Applies the properties of a selected object to other objects |
| ME | MEASURE / Joins similar objects to form a single, unbroken object |
| MEA | MEASUREGEOM / Measures the distance, radius, angle, area, and volume of selected objects or sequence of points |
| MI | MIRROR / Creates a mirrored copy of selected objects |
| ML | MLINE / Creates multiple parallel lines |
| MLA | MLEADERALIGN / Aligns and spaces selected multileader objects |
| MLC | MLEADERCOLLECT / Organizes selected multileaders that contain blocks into rows or columns, and displays the result with a single leader |
| MLD | MLEADER / Creates a multileader object |
| MLE | MLEADEREDIT / Adds leader lines to, or removes leader lines from, a multileader object |
| MLS | MLEADERSTYLE / Creates and modifies multileader styles |
| MO | PROPERTIES / Controls properties of existing objects |
| MORE | MESHSMOOTHMORE / Increases the level of smoothness for mesh objects by one level |
| MS | MSPACE / Switches from paper space to a model space viewport |
| MSM | MARKUP / Opens the Markup Set Manager |
| MT | MTEXT / Creates a multiline text object |
| MV | MVIEW / Creates and controls layout viewports |

**N**

|  |  |
| --- | --- |
| NORTH | GEOGRAPHICLOCATION / Specifies the geographic location information for a drawing file |
| NSHOT | NEWSHOT / Creates a named view with motion that is played back when viewed with ShowMotion |
| NVIEW | NEWVIEW / Creates a named view with no motion |

**O**

|  |  |
| --- | --- |
| O | OFFSET / Creates concentric circles, parallel lines, and parallel curves |
| OFFSETSRF | SURFOFFSET/ Creates a parallel surface or solid by setting an offset distance from a surface |
| OP | OPTIONS / Customizes the program settings |
| ORBIT / 3DO | 3DORBIT / Rotates the view in 3D space, but constrained to horizontal and vertical orbit only |
| OS | OSNAP / Sets running object snap modes |

P, Q, R

**P**

|  |  |
| --- | --- |
| P | PAN / Adds a parameter with grips to a dynamic block definition |
| PA | PASTESPEC / Pastes objects from the Clipboard into the current drawing and controls the format of the data |
| PAR | PARAMETERS / Controls the associative parameters used in the drawing |
| PARAM | BPARAMETER / Adds a parameter with grips to a dynamic block definition |
| PATCH | SURFPATCH / Creates a new surface by fitting a cap over a surface edge that forms a closed loop |
| PCATTACH | POINTCLOUDATTACH / Inserts an indexed point cloud file into the current drawing |
| PE | PEDIT / Edits polylines and 3D polygon meshes |
| PL | PLINE / Creates a 2D polyline |
| PO | POINT / Creates a point object |
| POFF | HIDEPALETTES / Hides currently displayed palettes (including the command line) |
| POL | POLYGON / Creates an equilateral closed polyline |
| PON | SHOWPALETTES / Restores the display of hidden palettes |
| PR | PROPERTIES / Displays Properties palette |
| PRE | PREVIEW / Displays the drawing as it will be plotted |
| PRINT | PLOT / Plots a drawing to a plotter, printer, or file |
| PS | PSPACE / Switches from a model space viewport to paper space |
| PSOLID | POLYSOLID / Creates a 3D wall-like polysolid |
| PU | PURGE / Removes unused items, such as block definitions and layers, from the drawing |
| PYR | PYRAMID / Creates a 3D solid pyramid |

**Q**

|  |  |
| --- | --- |
| QC | QUICKCALC / Opens the QuickCalc calculator |
| QCUI | QUICKCUI / Displays the Customize User Interface Editor in a collapsed state |
| QP | QUICKPROPERTIES / Displays open drawings and layouts in a drawing in preview images |
| Q | QSAVE / Saves the current drawing |
| QVD | QVDRAWING / Displays open drawings and layouts in a drawing using preview images |
| QVDC | QVDRAWINGCLOSE / Closes preview images of open drawings and layouts in a drawing |
| QVL | QVLAYOUT / Displays preview images of model space and layouts in a drawing |
| QVLC | QVLAYOUTCLOSE / Closes preview images of model space and layouts in the current drawing |

**R**

|  |  |
| --- | --- |
| R | REDRAW / Refreshes the display in the current viewport |
| RA | REDRAWALL / Refreshes the display in all viewports |
| RC | RENDERCROP / Renders a specified rectangular area, called a crop window, within a viewport |
| RE | REGEN / Regenerates the entire drawing from the current viewport |
| REA | REGENALL / Regenerates the drawing and refreshes all viewports |
| REC | RECTANG / Creates a rectangular polyline |
| REG | REGION / Converts an object that encloses an area into a region object |
| REN | RENAME / Changes the names assigned to items such as layers and dimension styles |
| REV | REVOLVE / Creates a 3D solid or surface by sweeping a 2D object around an axis |
| RO | ROTATE / Rotates objects around a base point |
| RP | RENDERPRESETS / Specifies render presets, reusable rendering parameters, for rendering an image |
| RR | RENDER / Creates a photorealistic or realistically shaded image of a 3D solid or surface model |
| RW | RENDERWIN / Displays the Render window without starting a rendering operation |

S, T, U

**S**

|  |  |
| --- | --- |
| S | STRETCH / Stretches objects crossed by a selection window or polygon |
| SC | SCALE / Enlarges or reduces selected objects, keeping the proportions of the object the same after scaling |
| SCR | SCRIPT / Executes a sequence of commands from a script file |
| SEC | SECTION / Uses the intersection of a plane and solids, surfaces, or mesh to create a region |
| SET | SETVAR / Lists or changes the values of system variables |
| SHA | SHADEMODE / Starts the VSCURRENT command |
| SL | SLICE / Creates new 3D solids and surfaces by slicing, or dividing, existing objects |
| SN | SNAP / Restricts cursor movement to specified intervals |
| SO | SOLID / Creates solid-filled triangles and quadrilaterals |
| SP | SPELL / Checks spelling in a drawing |
| SPE | SPLINEDIT / Edits a spline or spline-fit polyline |
| SPL | SPLINE / Creates a smooth curve that passes through or near specified points |
| SPLANE | SECTIONPLANE / Creates a section object that acts as a cutting plane through 3D objects |
| SPLAY | SEQUENCEPLAY / Plays named views in one category |
| SPLIT | MESHSPLIT / Splits a mesh face into two faces |
| SSM | SHEETSET / Opens the Sheet Set Manager |
| ST | STYLE / Creates, modifies, or specifies text styles |
| STA | STANDARDS / Manages the association of standards files with drawings |
| SU | SUBTRACT / Combines selected 3D solids, surfaces, or 2D regions by subtraction |

**T**

|  |  |
| --- | --- |
| T | MTEXT / Creates a multiline text object |
| TA | TEXTALIGN / Aligns multiple text objects vertically, horizontally, or obliquely |
| TB | TABLE / Creates an empty table object |
| TED | TEXTEDIT / Edits a dimensional constraint, dimension, or text object |
| TH | THICKNESS / Sets the default 3D thickness property when creating 2D geometric objects |
| TI | TILEMODE / Controls whether paper space can be accessed |
| TOL | TOLERANCE / Creates geometric tolerances contained in a feature control frame |
| TOR | TORUS / Creates a donut-shaped 3D solid |
| TP | TOOLPALETTES / Opens the Tool Palettes window |
| TR | TRIM / Trims objects to meet the edges of other objects |
| TS | TABLESTYLE / Creates, modifies, or specifies table styles |

**U**

|  |  |
| --- | --- |
| UC | UCSMAN / Manages defined user coordinate systems. |
| UN | UNITS / Controls coordinate and angle display formats and precision. |
| UNHIDE / UNISOLATE | UNISOLATEOBJECTS / Displays objects previously hidden with the ISOLATEOBJECTS or HIDEOBJECTS command. |
| UNI | UNION / Unions two solid or two region objects. |

V, W, X

**V**

|  |  |
| --- | --- |
| V | VIEW / Saves and restores named views, camera views, layout views, and preset views. |
| VGO | VIEWGO / Restores a named view. |
| VP | VPOINT / Sets the 3D viewing direction. |
| VPLAY | VIEWPLAY / Plays the animation associated to a named view. |
| VS | VSCURRENT / Sets the visual style in the current viewport. |
| VSM | VISUALSTYLES / Creates and modifies visual styles and applies a visual style to a viewport. |

**W**

|  |  |
| --- | --- |
| W | WBLOCK / Writes objects or a block to a new drawing file. |
| WE | WEDGE / Creates a 3D solid wedge. |
| WHEEL | NAVSWHEEL / Displays a wheel that contains a collection of view navigation tools. |

**X**

|  |  |  |  |
| --- | --- | --- | --- |
| X | EXPLODE / Breaks a compound object into its component objects. | | |
| XA | XATTACH / Inserts a DWG file as an external reference (xref). | | |
| XB | XBIND / Binds one or more definitions of named objects in an xref to the current drawing. | | |
| XC | XCLIP / Crops the display of a selected external reference or block reference to a specified boundary. | |
| XL | | XLINE / Creates a line of infinite length. | |
| XR | | XREF / Starts the EXTERNALREFERENCES command. | |

Y - Z

**Y**

**Z**

|  |  |
| --- | --- |
| Z | ZOOM / Increases or decreases the magnification of the view in the current viewport. |
| ZEBRA | ANALYSISZEBRA / Projects stripes onto a 3D model to analyze surface continuity. |
| ZIP | ETRANSMIT / Creates a Self-Extracting or Zipped Transmittal Package. |

**PRACTICAL B**



