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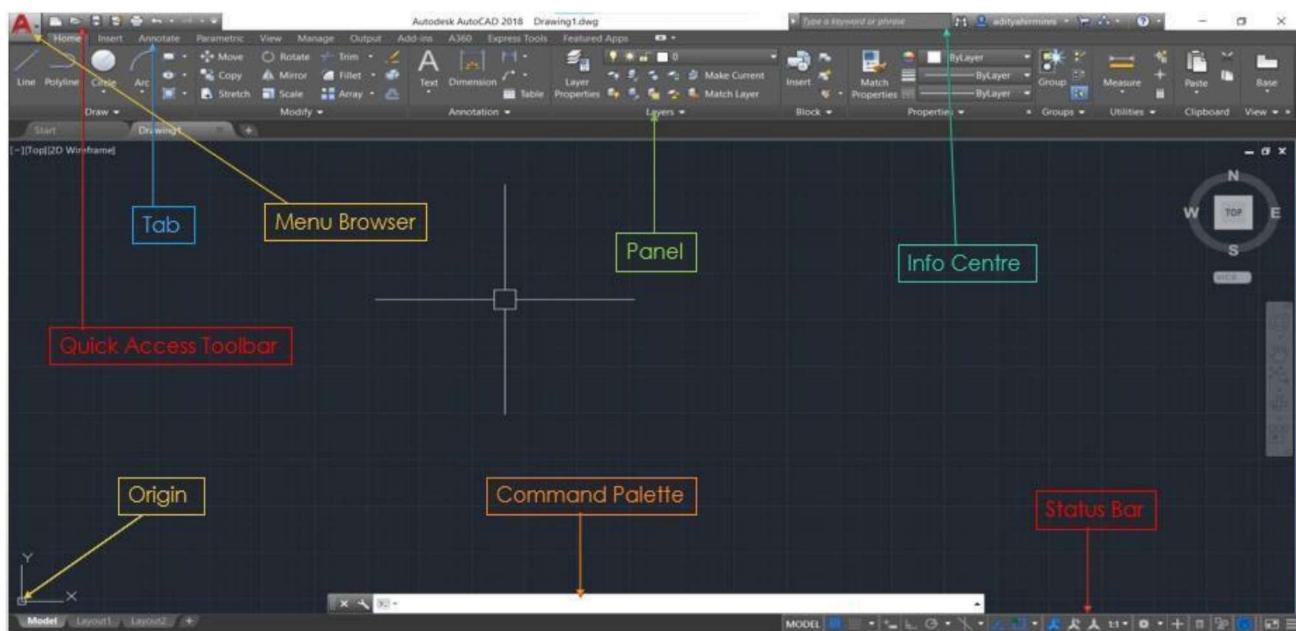
INTRODUCTION

- AutoCAD is the software majorly used for drafting purpose.
- The word AutoCAD is made up of two words “Auto” (digital) and “CAD” (Computer Aided Designing).
- It is developed by Autodesk Company.
- CAD is a utility tool or technology that is used for sharing of information with the help of computer.

BENEFITS OF AUTOCAD

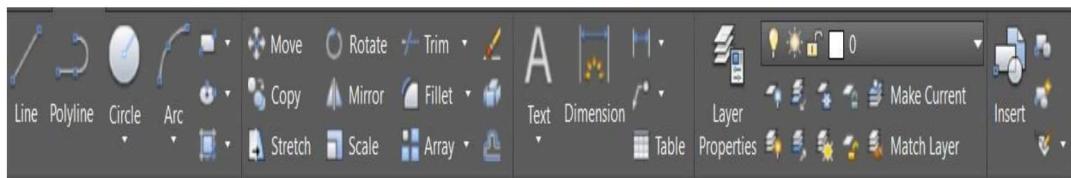
- File Handling
- Global File Sharing
- Easy to Modify
- More Accurate and Precised
- Improved Quality Over Hand Drafting
- More Reliable

AUTOCAD SCREEN



METHODS TO WORK IN AUTOCAD

❖ GUI (Graphic User Interface):-



In this interface we can choose tools by selecting its graphical representation or icon to work in AutoCAD.

❖ CUI (Command User Interface):-



In this interface we can type the command in command palette to work in AutoCAD.

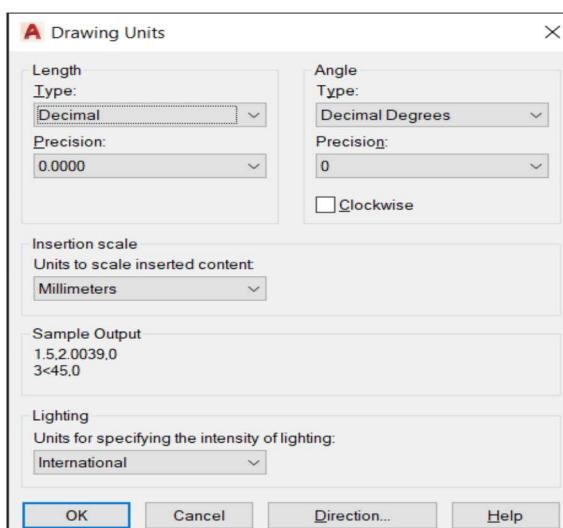
DRAWING UNITS

To set the Drawing Units, type **UN** then press **ENTER** key.

Then a pop-up window will appear.

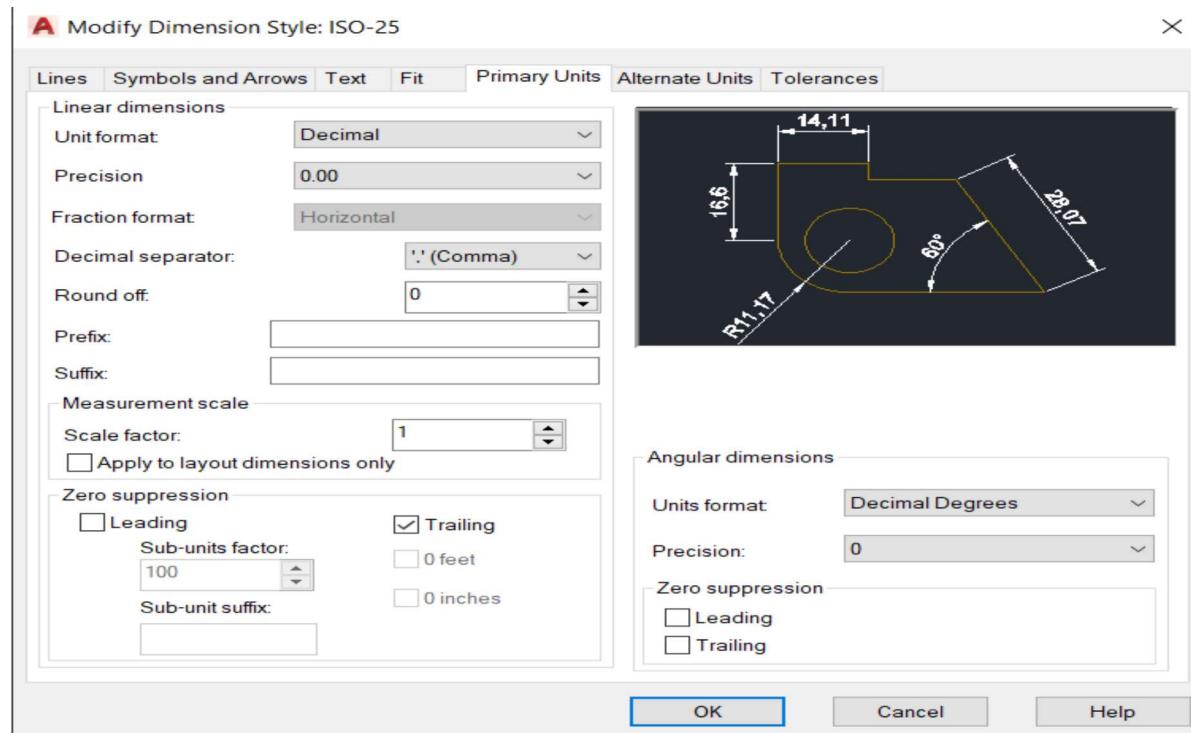
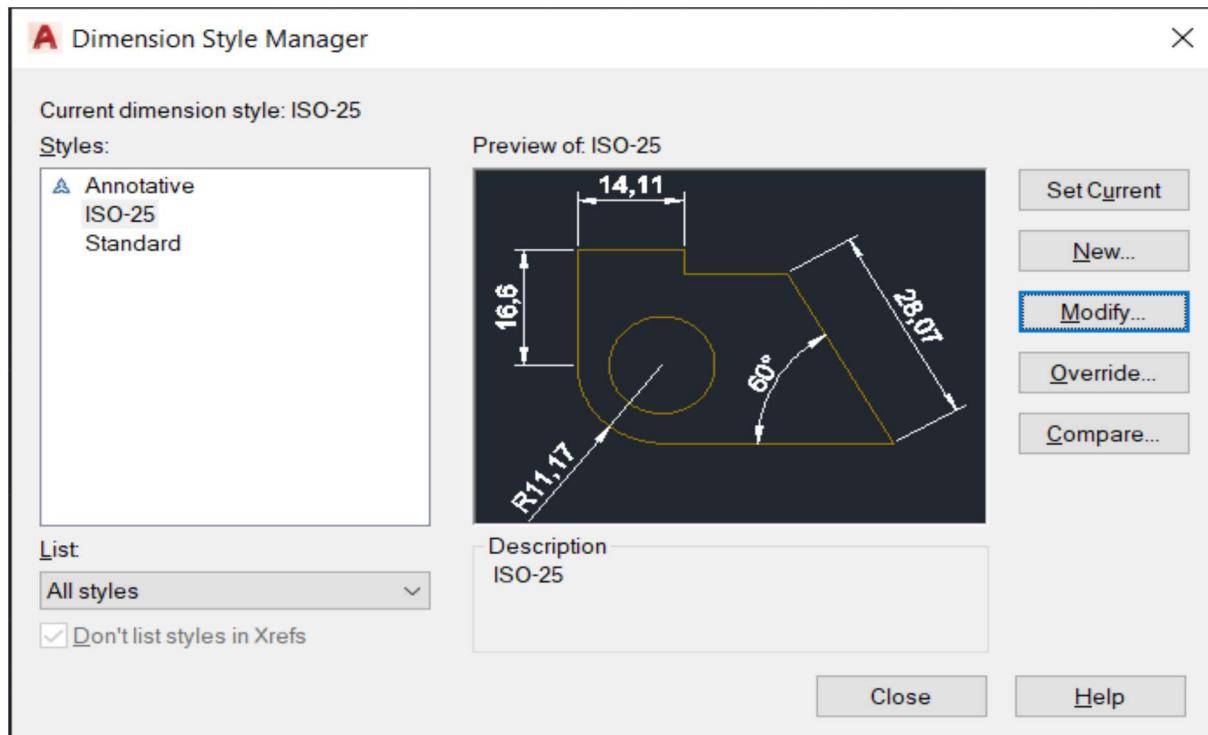
Then do the changes as per requirements.

Then click **OK**.



DIMENSION STYLE MANAGER

To set the Dimension Style, type **D** then press **ENTER** key.
Then a pop-up window will appear.
Then click on **Modify**.
Then do the changes as per requirements.



SOME COMMANDS WITH SHORTCUT

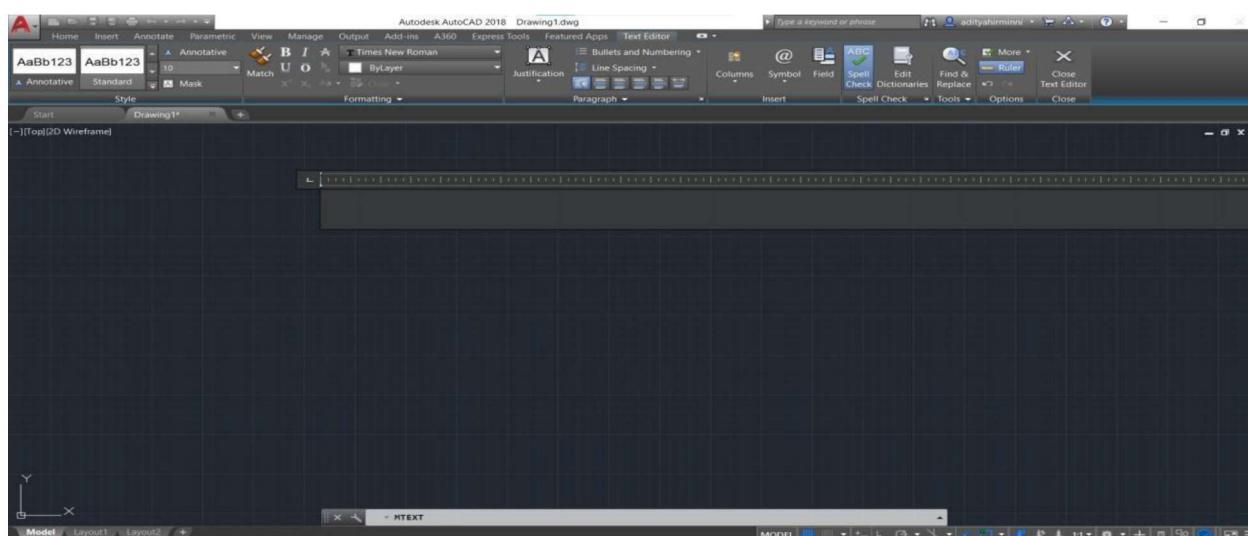
- | | | |
|----------------------|-----------------------------|--------------------------------------|
| 1) Line :- L | 24) Construction Line :- XL | 47) Dimension of Linear Line :- DLI |
| 2) Ortho :- F8 | 25) Array Classic :- ARRAYC | 48) Dimension of Aligned Line :- DAL |
| 3) Grid :- F7 | 26) Polygon :- POL | 49) Dimension of Radius :- DRA |
| 4) Osnap :- F3 | 27) Area :- AA | 50) Dimension of Diameter :- DDI |
| 5) Option :- OP | 28) Divide :- DIV | 51) Dimension of Angle :- DAN |
| 6) Offset :- O | 29) Point Style :- DDPTYPE | 52) Dimension of Arc Length :- DAR |
| 7) Trim :- TR | 30) Leader Line :- LE | 53) Dimension of Cont. Line :- DCO |
| 8) Mirror :- MI | 31) Special Line :- SPL | 54) Write Block :- W |
| 9) Pan :- PAN | 32) Stretch :- S | 55) Plot / Print :- PLOT / CTRL+P |
| 10) Copy :- CO | 33) Scale :- SC | 56) List :- LI |
| 11) Move :- M | 34) Hatch :- H | 57) Limit :- LIMIT |
| 12) Circle :- C | 35) Hatch Edit :- HEDIT | 58) Model View :- MV |
| 13) Rotate :- RO | 36) Block :- B | 59) External Reference :- XREF |
| 14) Ellipse :- EL | 37) Block Editor :- BE | 60) Chamfer :- CHA |
| 15) Rectangle :- REC | 38) Insert :- I | 61) Extrude :- EXT |
| 16) Polyline :- PL | 39) Design Centre :- DC | 62) Presspull :- PRESS |
| 17) Join :- J | 40) Table :- TB | 63) Union :- UNI |
| 18) Explode :- X | 41) Line Type :- LT | 64) Subtract :- SUB |
| 19) Extend :- EX | 42) Line Weight :- LW | 65) Loft :- LOFT |
| 20) Arc :- A | 43) Colour :- COL | 66) Revolve :- REV |
| 21) Fillet :- F | 44) Match Properties :- MA | 67) Sweep :- SWEEP |
| 22) Ray :- RAY | 45) Drafting Setting :- DS | 68) Slice :- SLICE |
| 23) Text :- T | 46) Line Type Scale :- LTS | |

TEXT COMMAND

To write the text in AutoCAD, type **T** then press **ENTER key**.

Then specify the corner points.

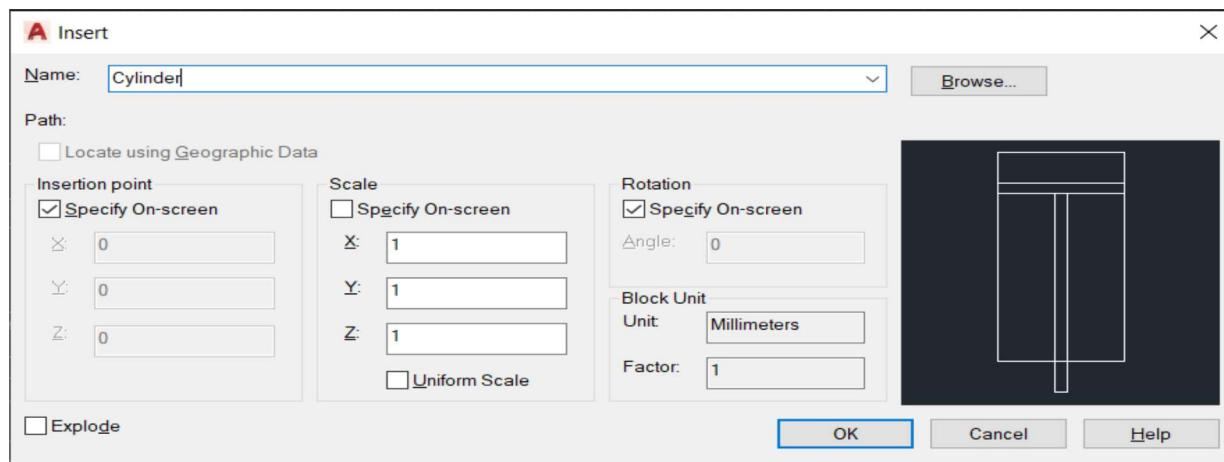
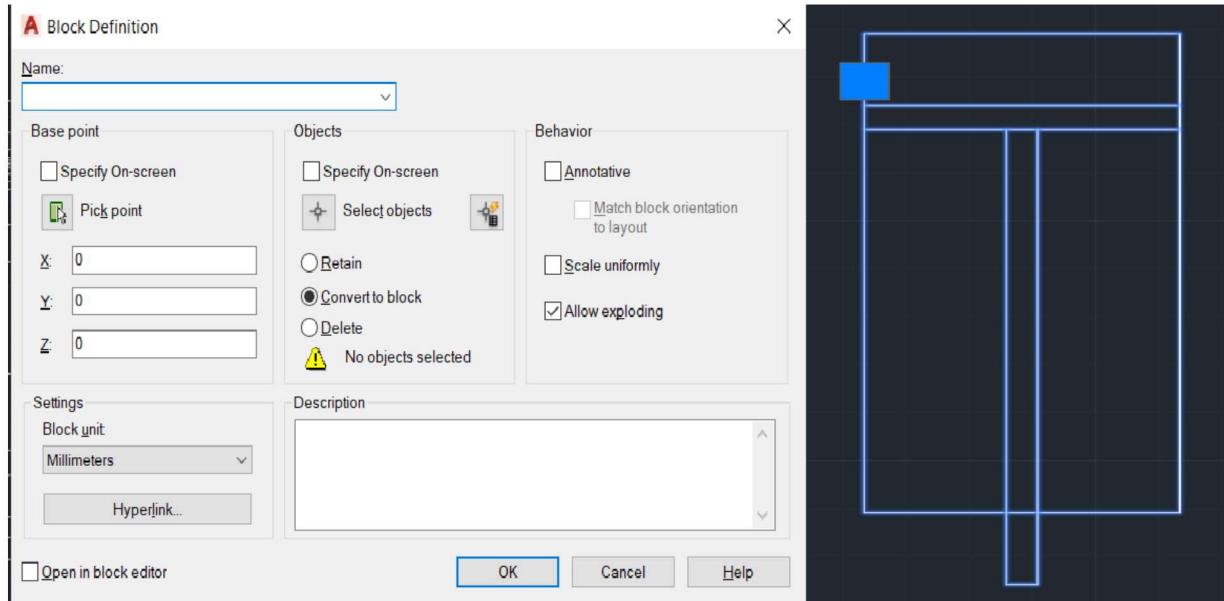
Then a rectangular window will appear where text can be typed. Also, from upper panel text size, font and colour can be changed.



BLOCK COMMAND

When the same object shown multiple times in a diagram then we use block command. First, we draw that object then type **B** then press **ENTER key**. Then a pop-up window will appear where we first provide a name then select the object then specify pick point. Then click **OK**.

To insert the block, we first type **I** then press **ENTER key**. Then select the block by choosing its name. Then click **OK**. Then click on screen with left mouse button to put that object where it is required.

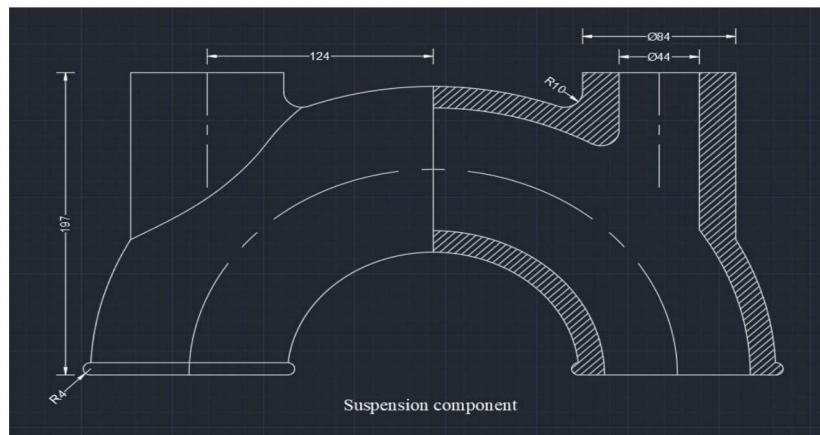
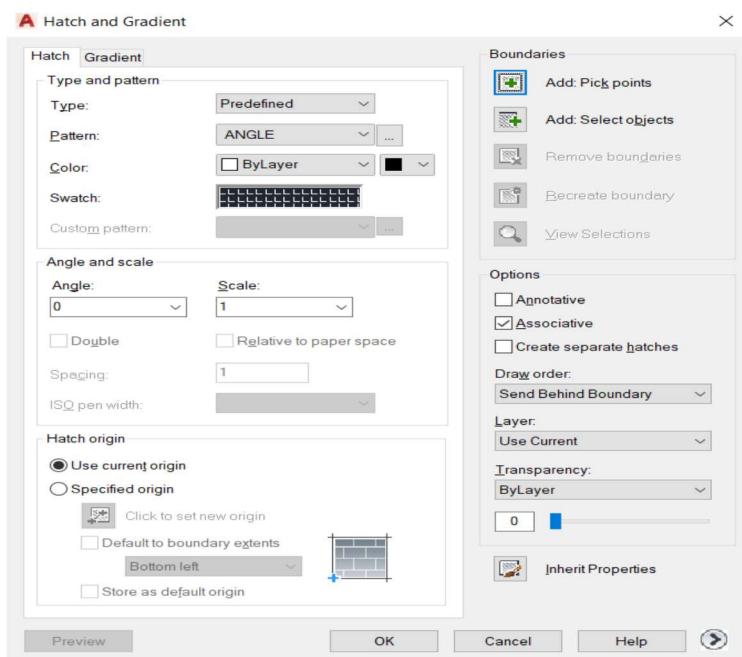


HATCH COMMAND

Hatching is used in technical drafting to communicate that an area of the drawing has a particular attribute. It indicates that a section cut through a part is a particular material or attribute.

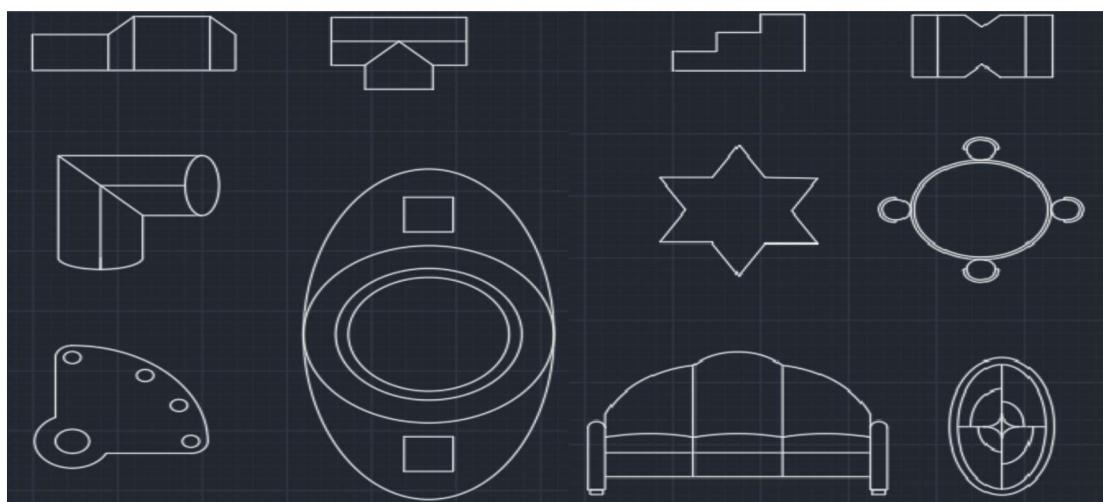
For hatching, type **H** then press **ENTER key** then type **T** then press **ENTER key**. Then a pop-up window will appear on screen. Then we change pattern, colour, angle and scale according to the requirements. Then click **OK**.

If we have to edit the hatching, type **HEDIT** then press **ENTER key** and click on the hatched area and do the changes.

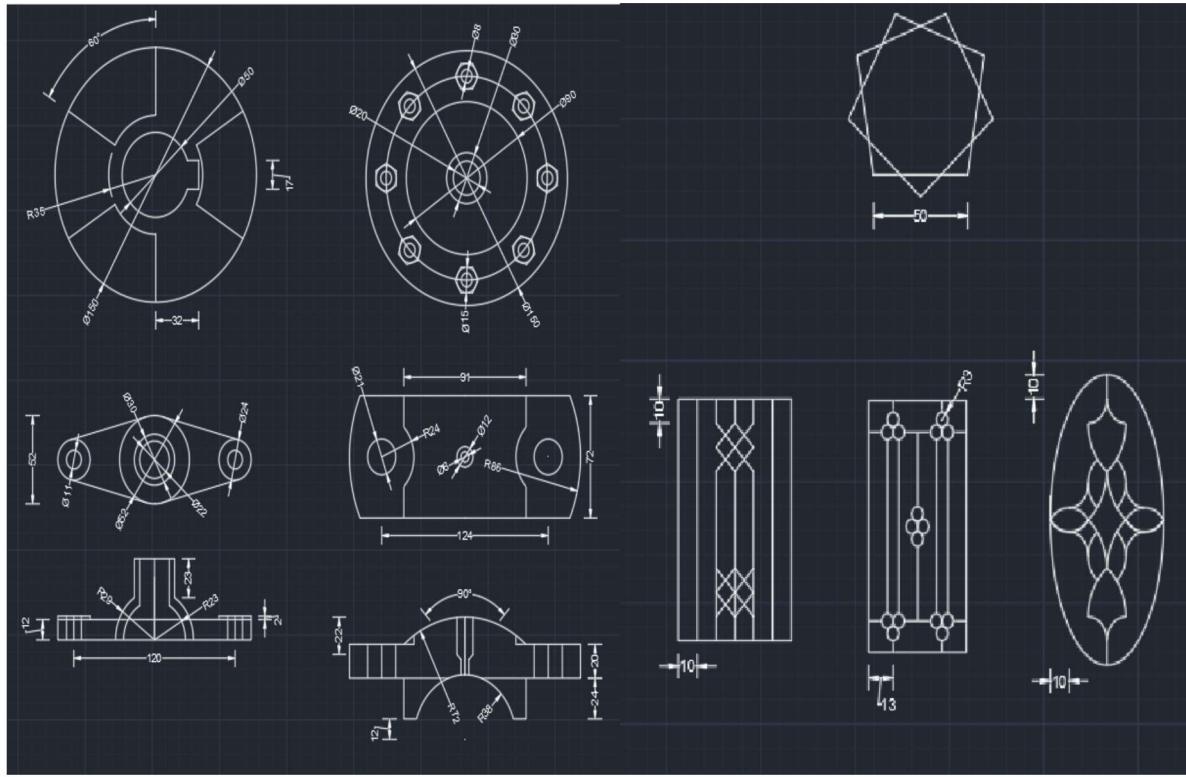


DRAWINGS MADE IN AUTOCAD

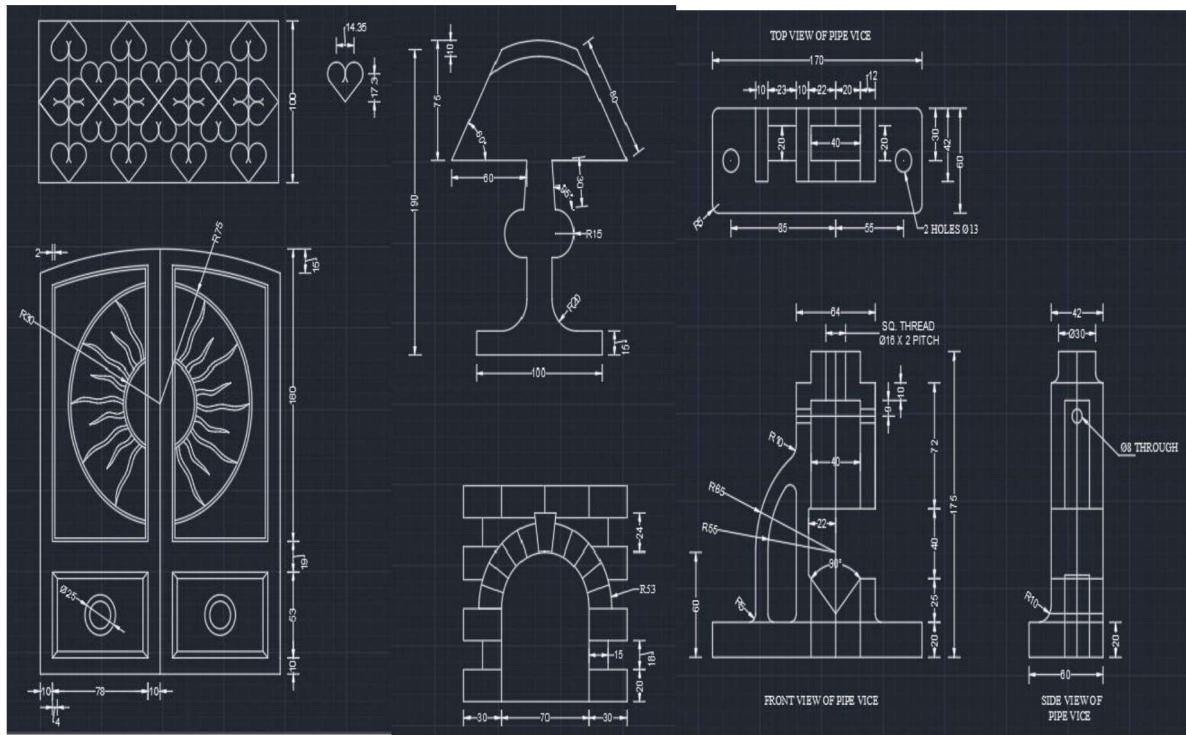
❖ By the use of line, offset, osnap, trim, mirror, circle, ellipse, arc commands.



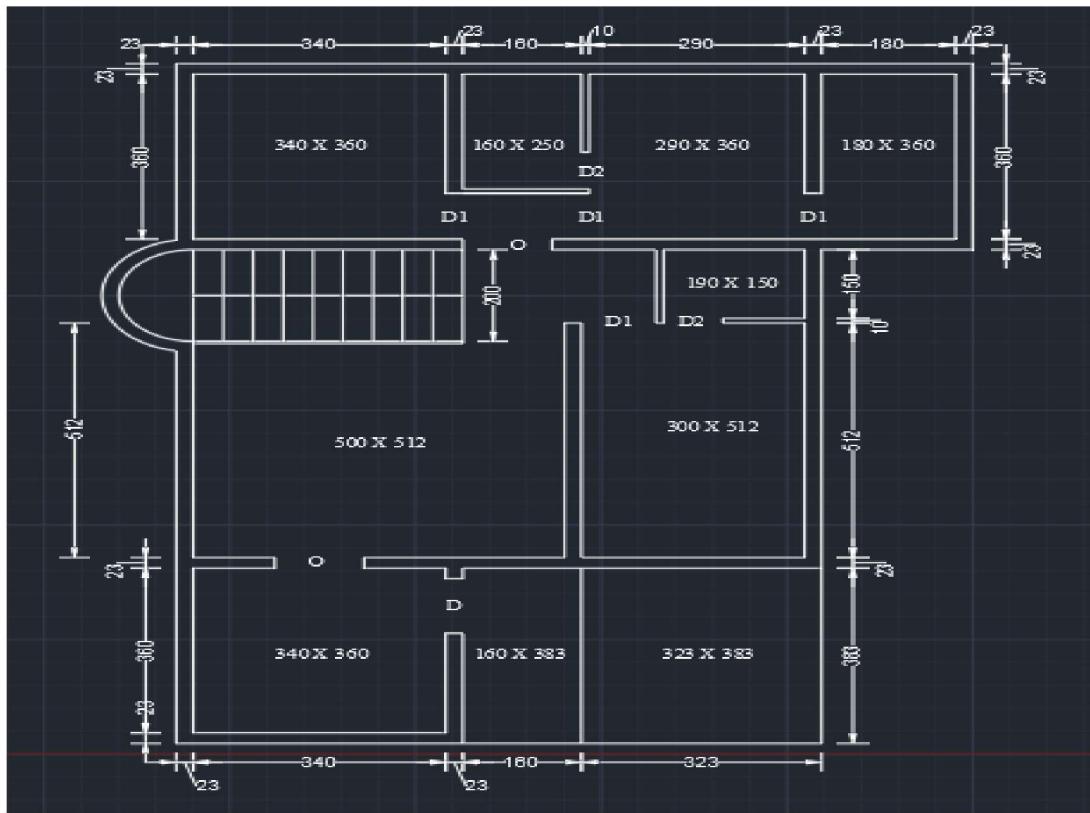
- ❖ By the use of line, offset, osnap, trim, mirror, circle, arrayclassic, ellipse, arc commands.



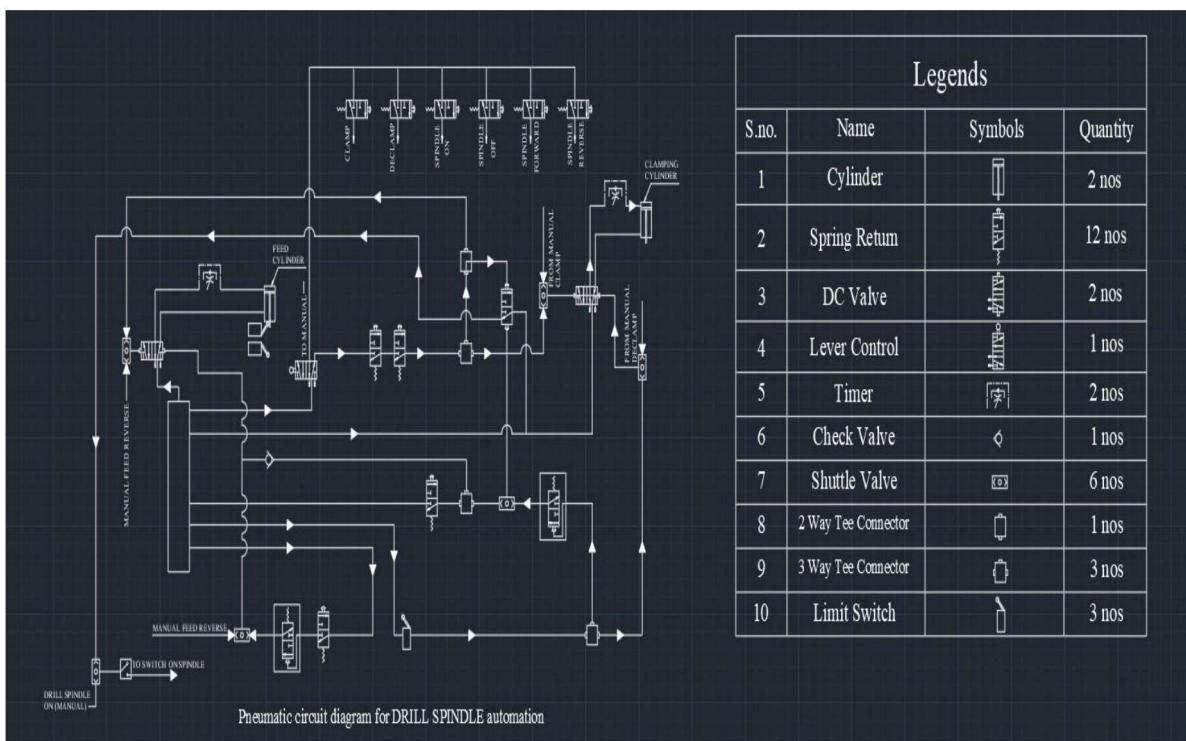
- ❖ By the use of line, offset, copy, osnap, trim, mirror, circle, special line, arrayclassic, ellipse, arc, construction line commands.



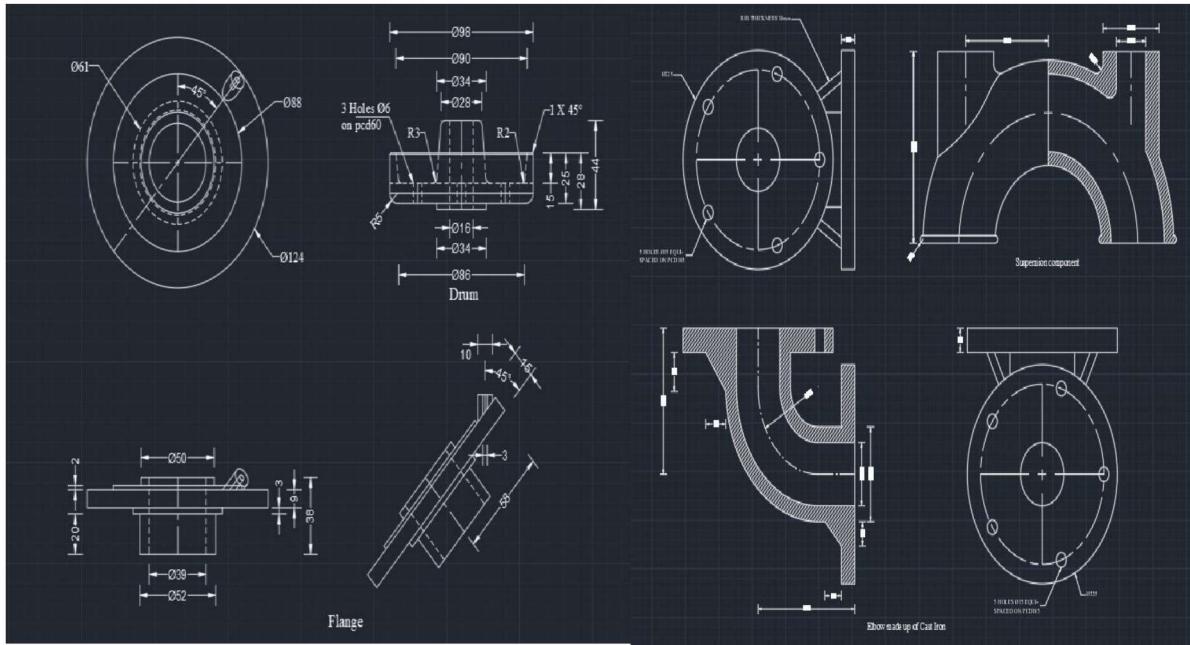
- ❖ By the use of line, offset, divide, point style, osnap, trim, fillet, construction line commands.



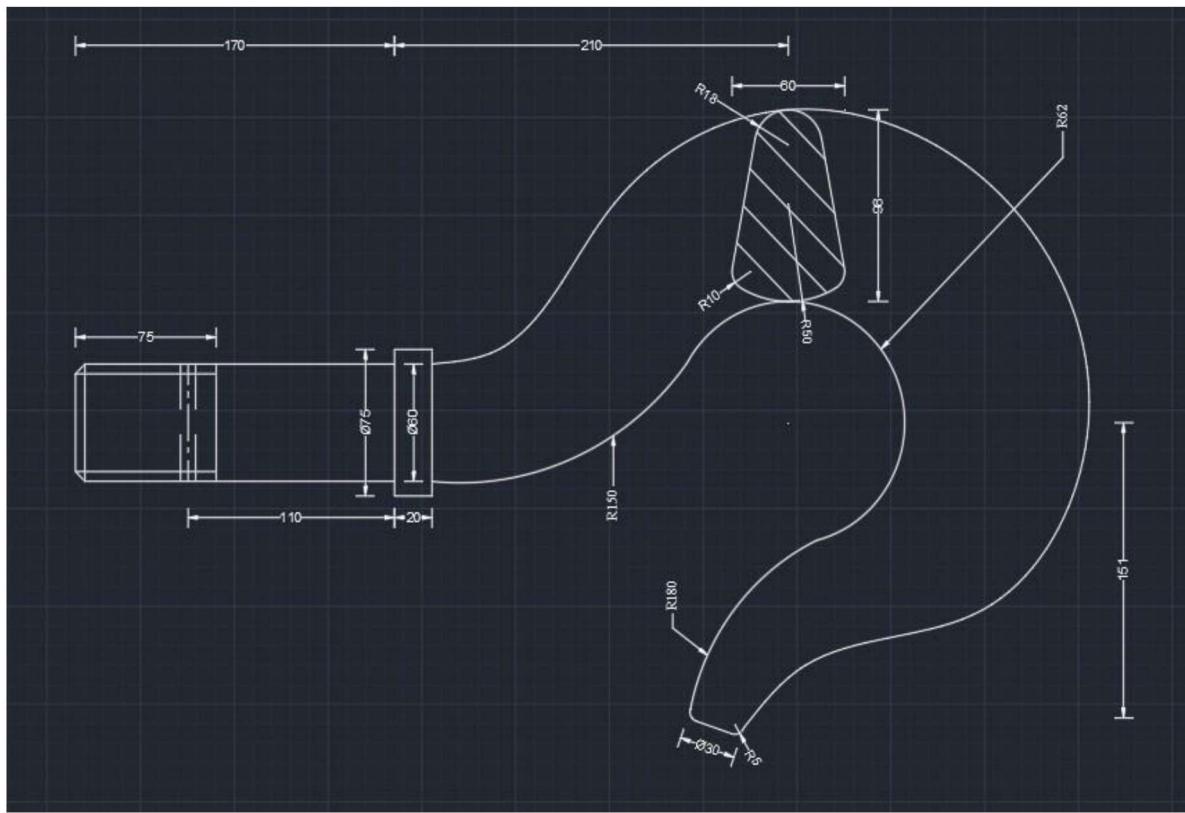
- ❖ By the use of line, offset, block, insert, osnap, line type, trim, circle commands.



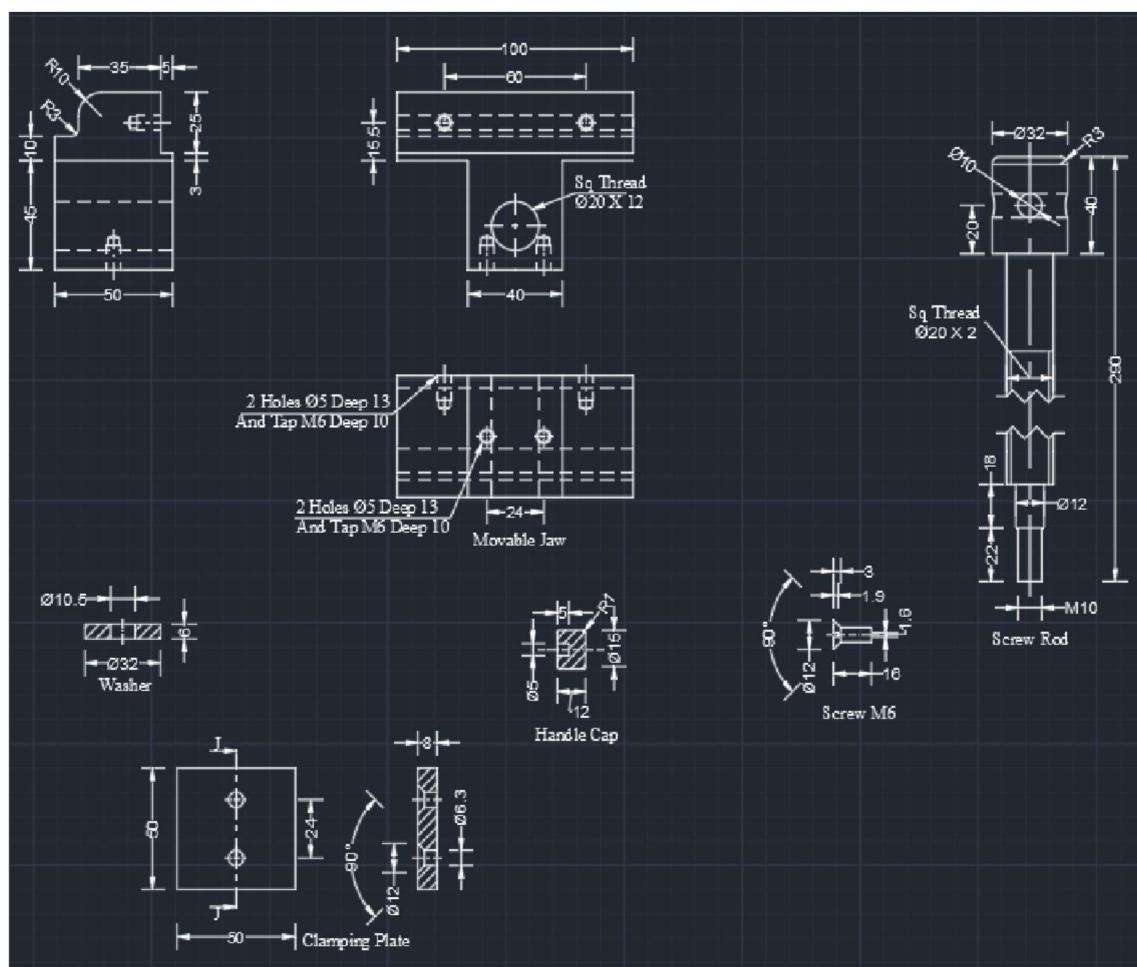
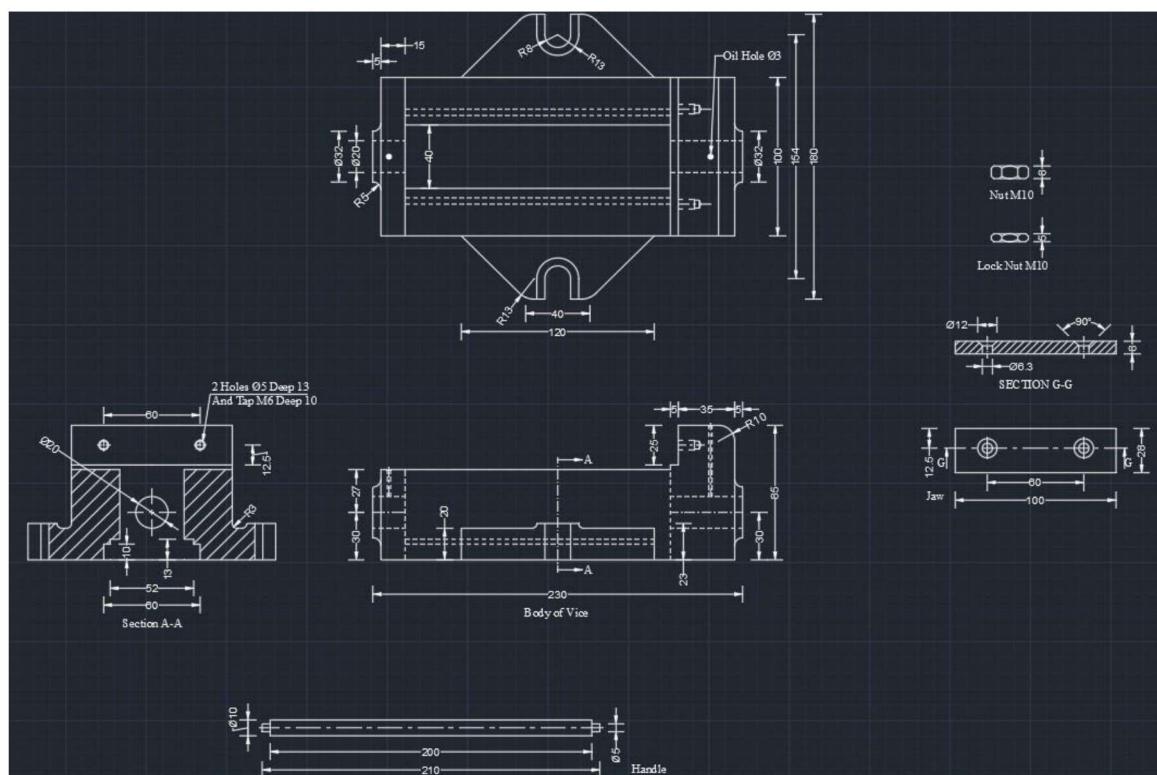
- ❖ By the use of line, offset, rotate, ellipse, fillet, osnap, line type, hatch, arrayclassic, trim, circle, construction line, special line commands.



- ❖ By the use of line, offset, fillet, osnap, line type, hatch, trim, circle, special line, arc commands.

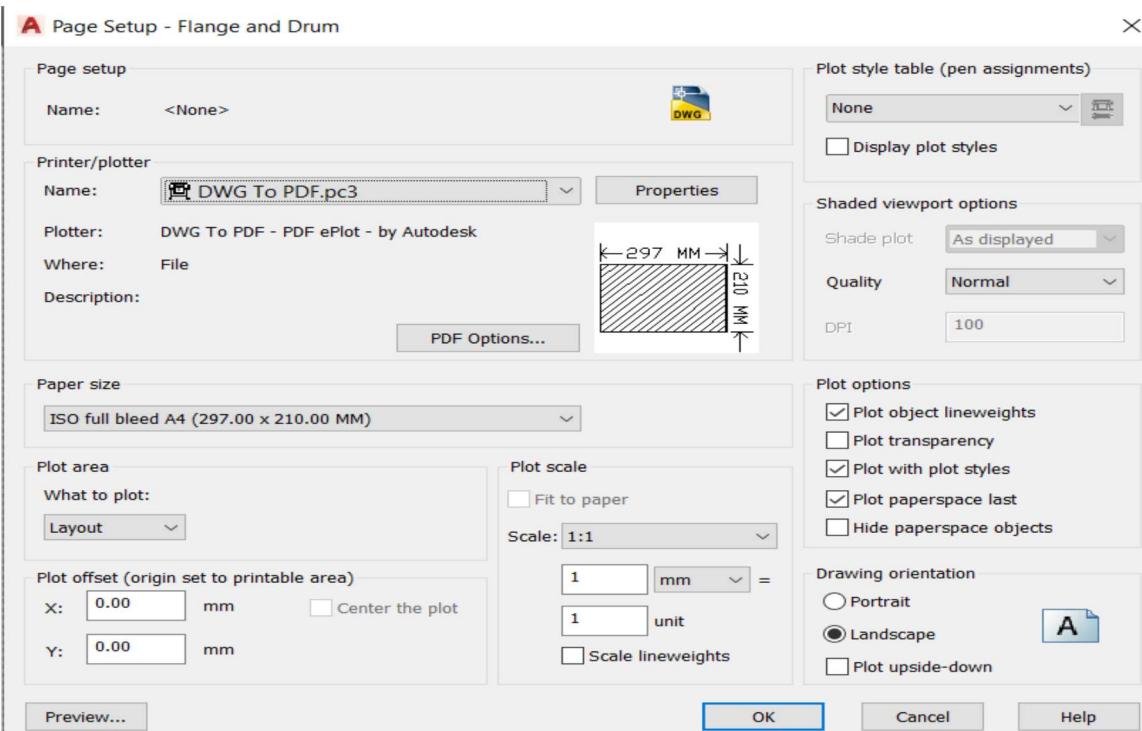
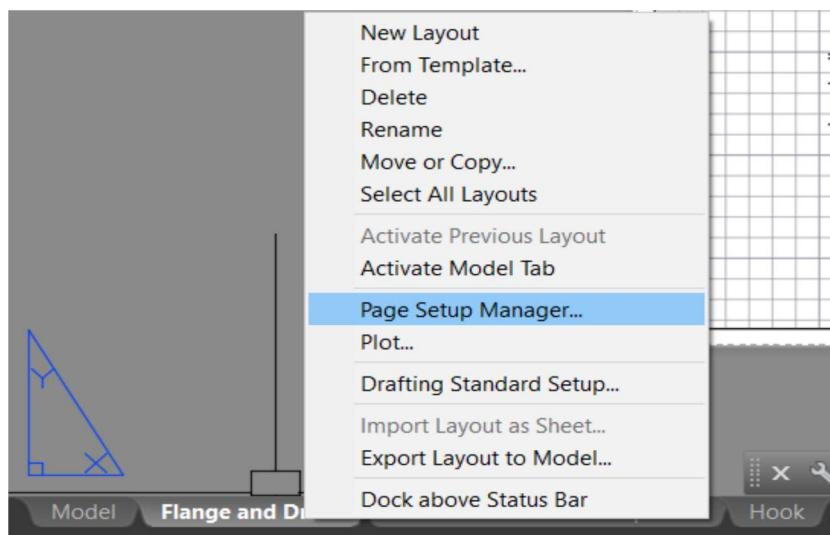


- ❖ By the use of line, offset, fillet, osnap, line type, hatch, trim, circle, extend, stretch, arc, construction line commands.



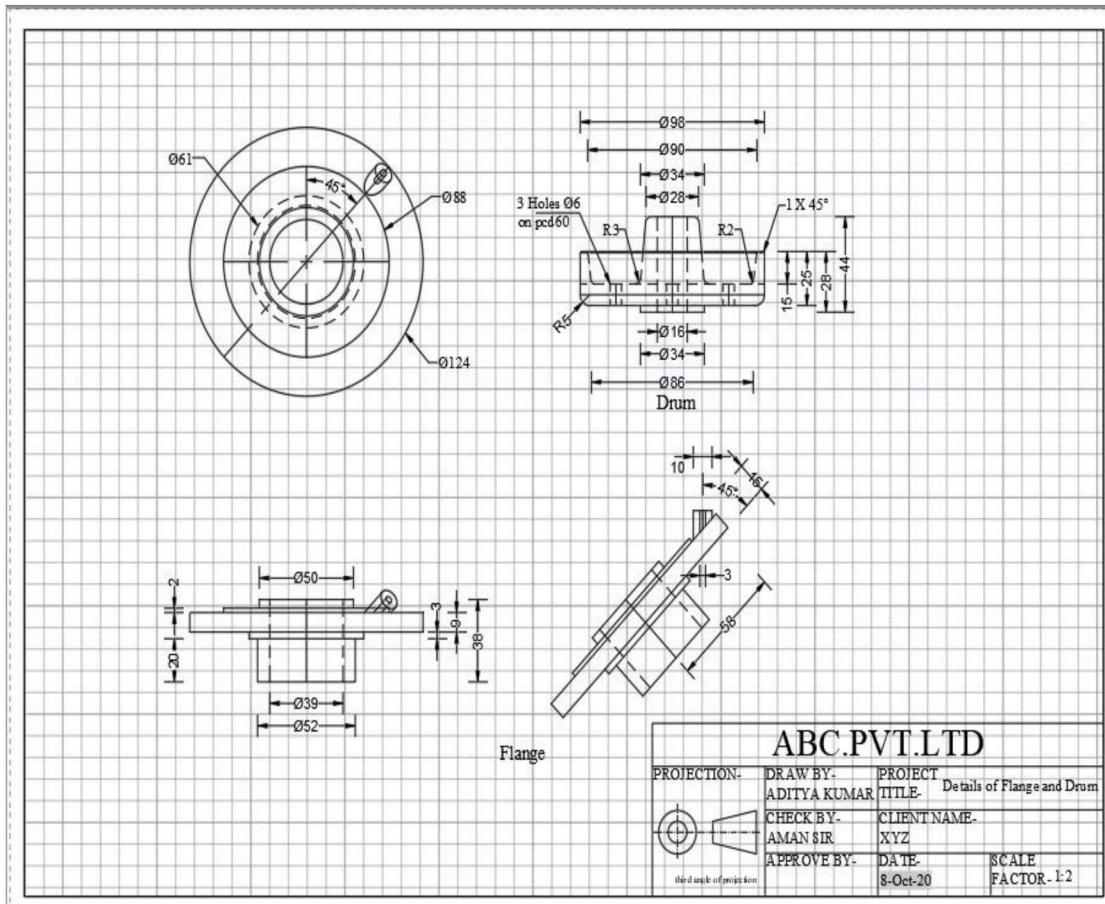
LAYOUT

When we have to insert a diagram in required size of paper or with title box then we use layout function. First, go to **layout**. Then **right click** on it and go to **page setup manager**. Then go to **modify** and set the **file type**, **paper size** and **orientation of paper**. Then **right click on model view** and **delete it**. Then create a new model view by typing **MV** then press **ENTER key**. Then **double click** inside the model view to activate it and set the desired scale and object for printout. Then **double click** outside the model view to activate layout. Then **CTRL + P** and take the print out.

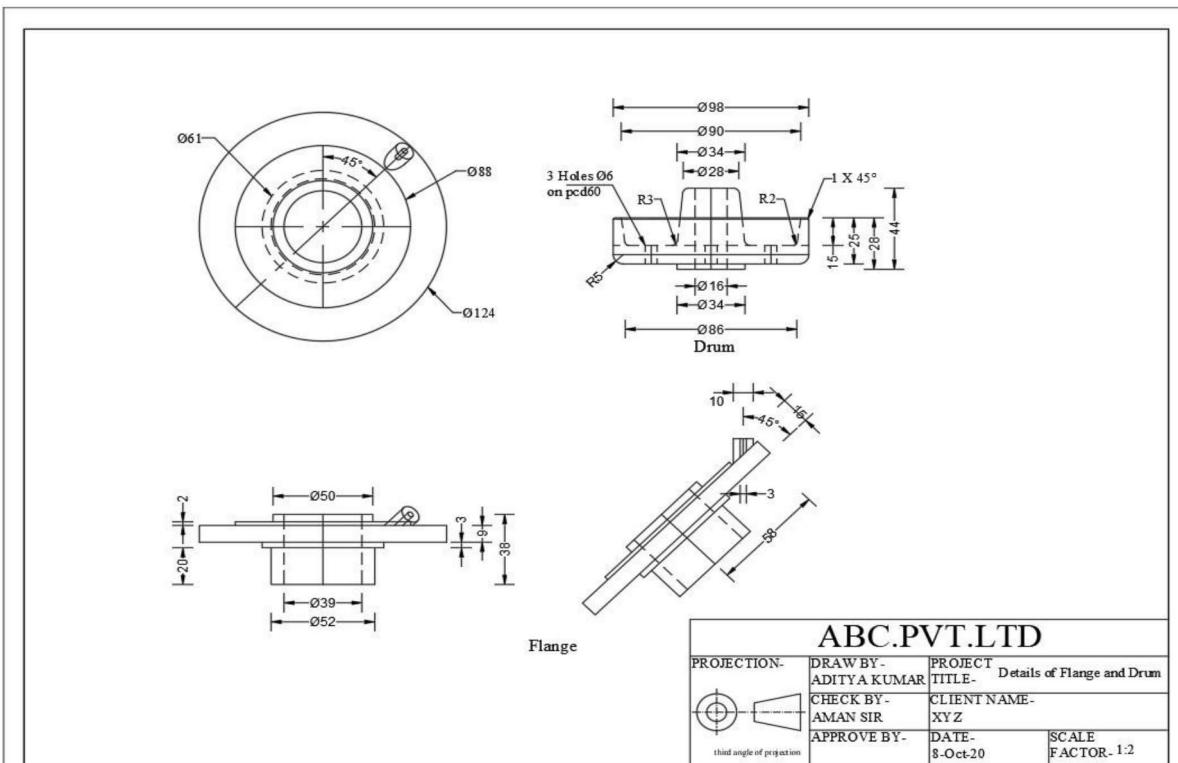


DRAWING ON LAYOUT

❖ In DWG form on layout



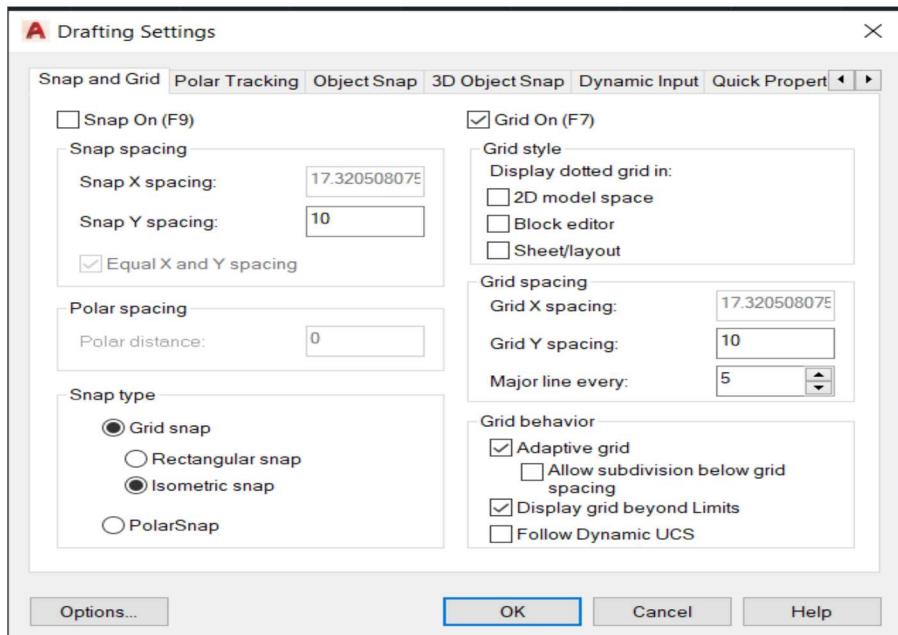
❖ In PDF form



ISOMETRIC DRAWING

Isometric projection is a method for visually representing 3D objects in 2D in technical and engineering drawings. In this projection, all three angles made by X, Y and Z axis are 120° each.

To make isometric drawing, we have to first go to drafting setting by typing **DS** then press **ENTER key**. Then go to **snap and grid**. Then go to **snap type** and click on **Isometric snap**.



Rules on Isometric Drawing:-

1. Ortho should always be on.
2. Use F5 key to change between planes.
3. Circle, Rectangle, Mirror and Offset commands should not be used in isometry.



3D DRAWING

3D Drawing is used to depict something that has volume or space.

Rules on 3D Drawing:-

1. Object must be in polyline.
2. Object must be in a closed loop.
3. Loop should not be self- intersecting.

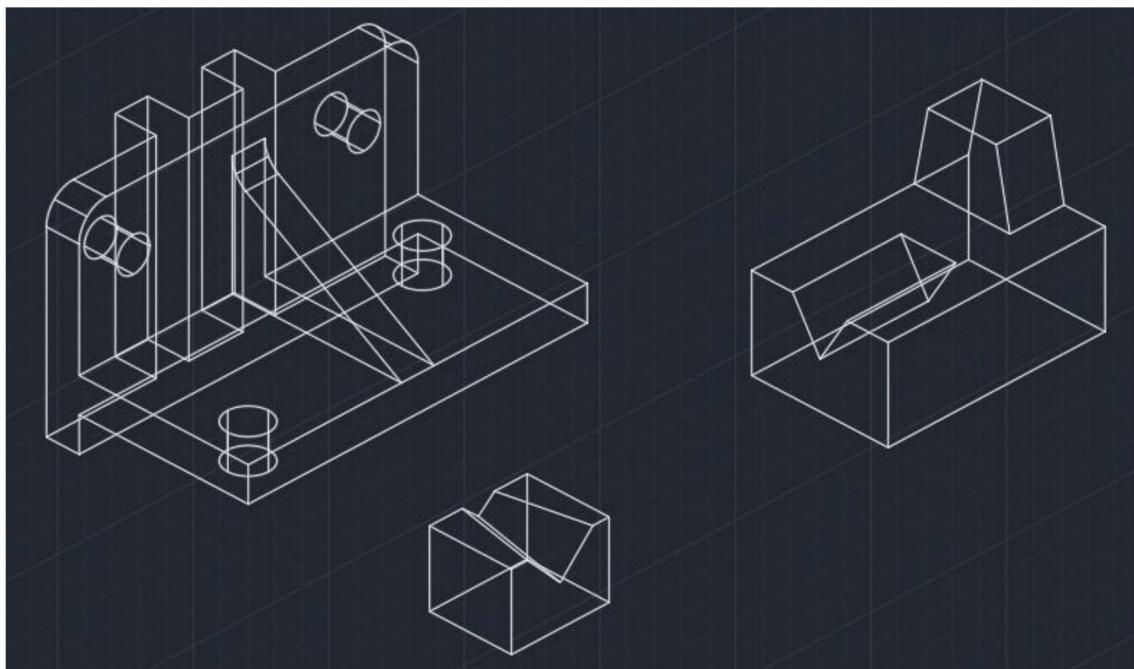
Commands to convert objects from 2D to 3D:-

1. **EXTRUDE**:- Type **EXT** then press **ENTER key**. Then select the objects to extrude then press **ENTER key**. Then specify height then press **ENTER key**. It is used to create solid model.
2. **PRESSPULL**:- Type **PRESS** then press **ENTER key**. Then select face and specify the changes.

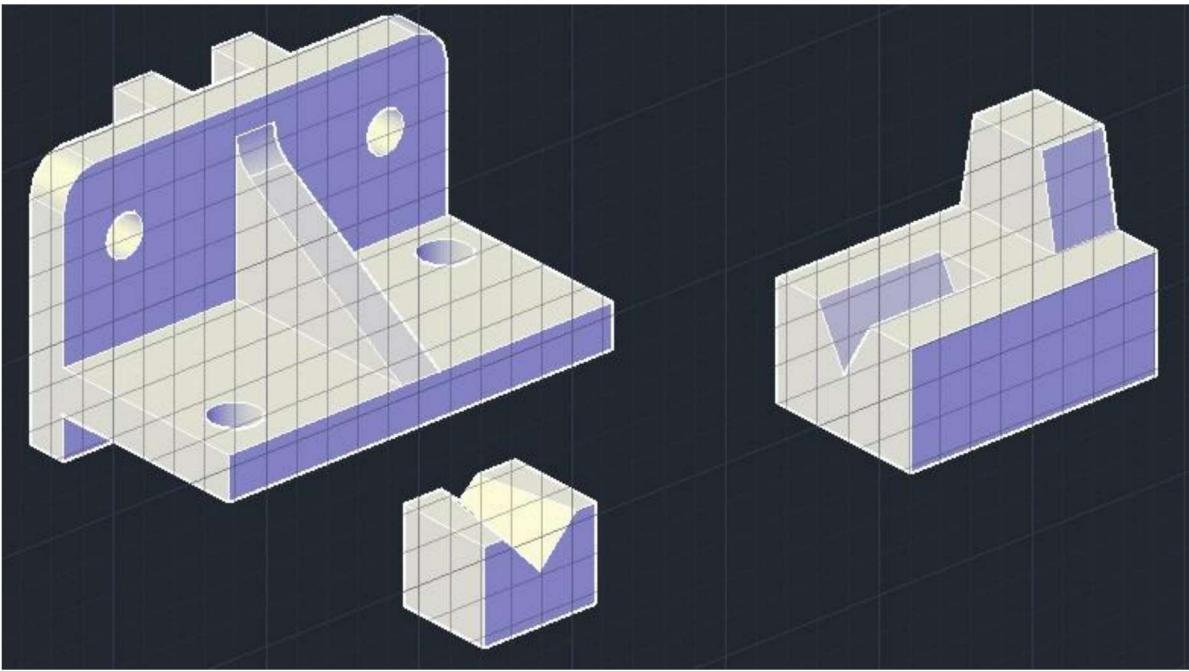
3D DRAWING MADE IN AUTOCAD

By the use of line, rectangle, circle, extrude, union, subtract, move, copy commands.

❖ In 2D Wireframe Visual Style



❖ In Conceptual Visual Style



CONCLUSION

This report covered the preview of our learning path and study materials. The use of AutoCAD has many advantages. It can help to reduce the time it takes to produce the drawing needed in the work environment. AutoCAD software is the most amazing range of mechanical computer aided design tool. It is now considered to be the best according to industry standards that can be obtained for a wide array of designing, Mechanical Engineering Services and other industrial purposes.

The use of AutoCAD may also be relied on heavily in order to create efficiencies within the industries. We were guided by the fact that there is more to learning AutoCAD than drawing simple figures and lines. It has very vast application in the field of manufacturing, architecture, electrical, and many more. With the help of AutoCAD, we can create design very quickly. It improves the quality of the drawing which we can't get by hand drafting. With the help of this software, drawing can be easily modified whenever wanted which reduces the human effort. We can easily transfer files from one place to another in no time which reduces the time.

This software is utilized to provide some useful and practical designing software that will allow users to visualize as well as create prototypes of a product in reality and quick time. AutoCAD software allows developers to give form to their out of the box ideas.
