SRM INSTITUTE OF SCIENCE & TECHNOLOGY

1. **Exercise : 6** 2. **Date:** 02 Dec. 2020

3. **Title** : Combinations of solids: CSG, and advanced solid modelling.

4. **Aim** : To model simple combination of solids by Constructive Solid Geometry (CSG), and some advanced models using sweep, loft, shell solid models and obtain their projections.

5. **Software used:** Auto CAD 2021.

6. **Introduction:** CSG, Advanced solid modelling

→ CSG is a combination of solids formed by combining two or more different solids.

→ Advanced solid modelling is the most advanced method of geometrical modelling in 3D.

6.2 CSG sketch):

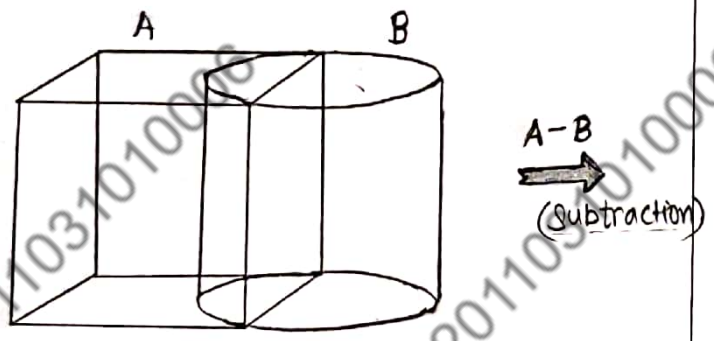


Fig.

6.2 Real time example - Picture

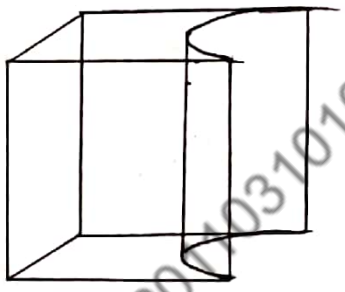


Fig.

7. **Procedure** (for solving question #):

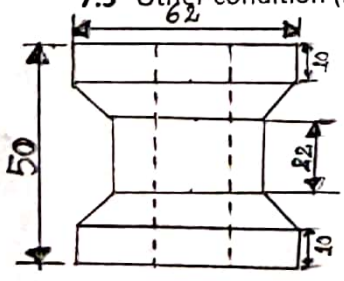
7.1 Question outline : Drawing model of given dimensions.

7.2 Object : Pulley

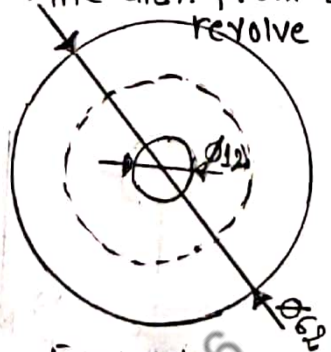
7.3 Resting on Conditions : On HP in front view.

7.4 Other resting condition (if any) : -

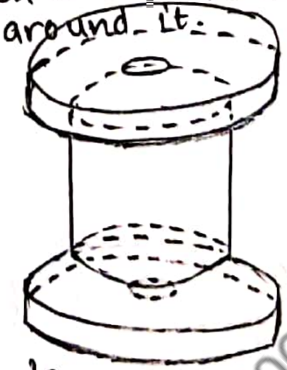
7.5 Other condition (if any) : The dist. from the centre to axis 1mm & revolve 360° around it.



Top view



Front view



Isometric view

Fig. Free hand sketch of the solution to question #

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7.6 Procedure:

→ Step 1.

Set the limits, units and zoom (All) in drawing area.

→ Step 2:- Draw the given fig. (plane) as per dimensions given, also draw the axis in 2-D mode.

→ Step 3:- Use the revolve command and revolve the fig. 360° around the axis to obtain 3-D solid.

→ Step 4:- Show all projections, plot the isometric view and mark the dimensions.

8. Commands used:

S.N.	Command	Use
1.	Units	To specify units, precision.
2.	Limits	To set drawing area & grid.
3	Zoom	To increase & decrease the size
4.	Line	To create straight line
5.	Offset	To offset an object at a specified dist.
6.	Trim	To delete unwanted lines.
7.	Region	To combine several region into a single.
8.	Revolve	To create 3D solid by sweeping curve.
9.	Model Space	To generates the different view.
10.	Dim	To Accesses dimensioning.
11.	Text.	To Write text.

9. Result:

We have successful drawn various solids by combining many simple solids in AutoCAD. Combination of solid are drawn in AutoCAD

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