# DESIGN-A-THON

BASIC RULES

- **Not more than 4 members per team**

- **Max. Duration: 7 days**

- **From a set of given problems, a team can choose any one problem**

- **Multiple teams can work on the same problem**

- **Any software or open sources can be used, but need to be referenced/acknowledged**

- **Complete solution along with the journey needs to be presented during the event**

- **Points will be awarded to the team depending on,**

  - Problem understanding

  - Clarity of thought

  - Planning

  - Execution

  - Final outcome & Presentation

- Team with maximum points will be awarded the first and second prizes

  - First Prize: 75,000/- INR per team

  - Second prize: 50,000/- INR per team

  - Meritorious: 10,000/- INR per team (Only if the idea & solution are good but not in first 2 places)
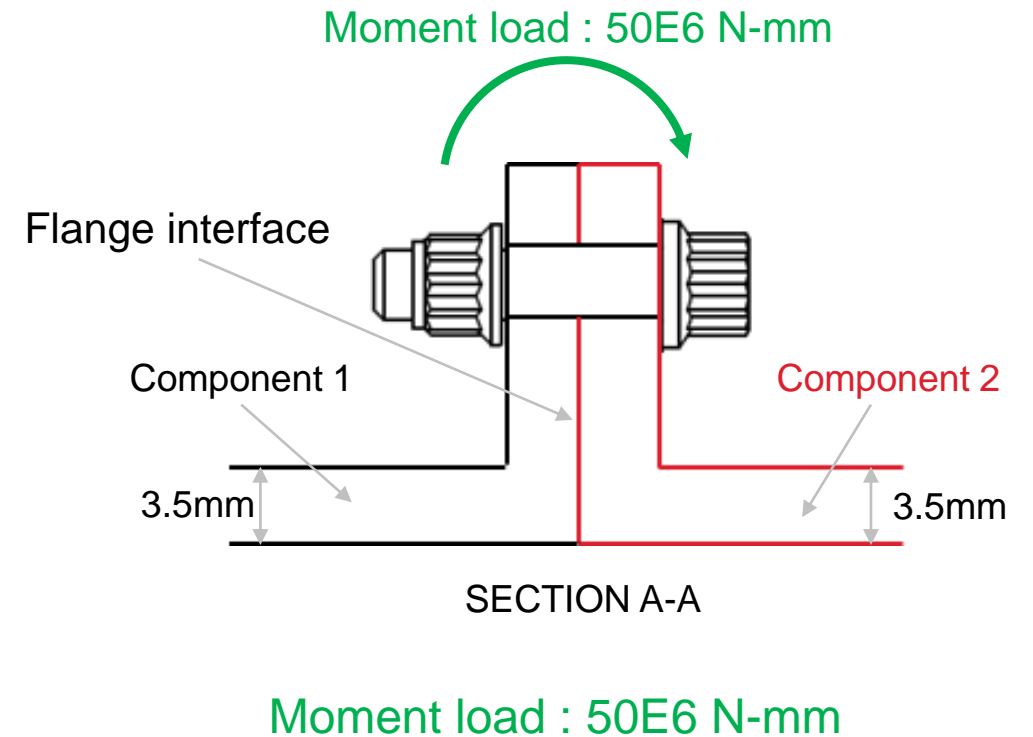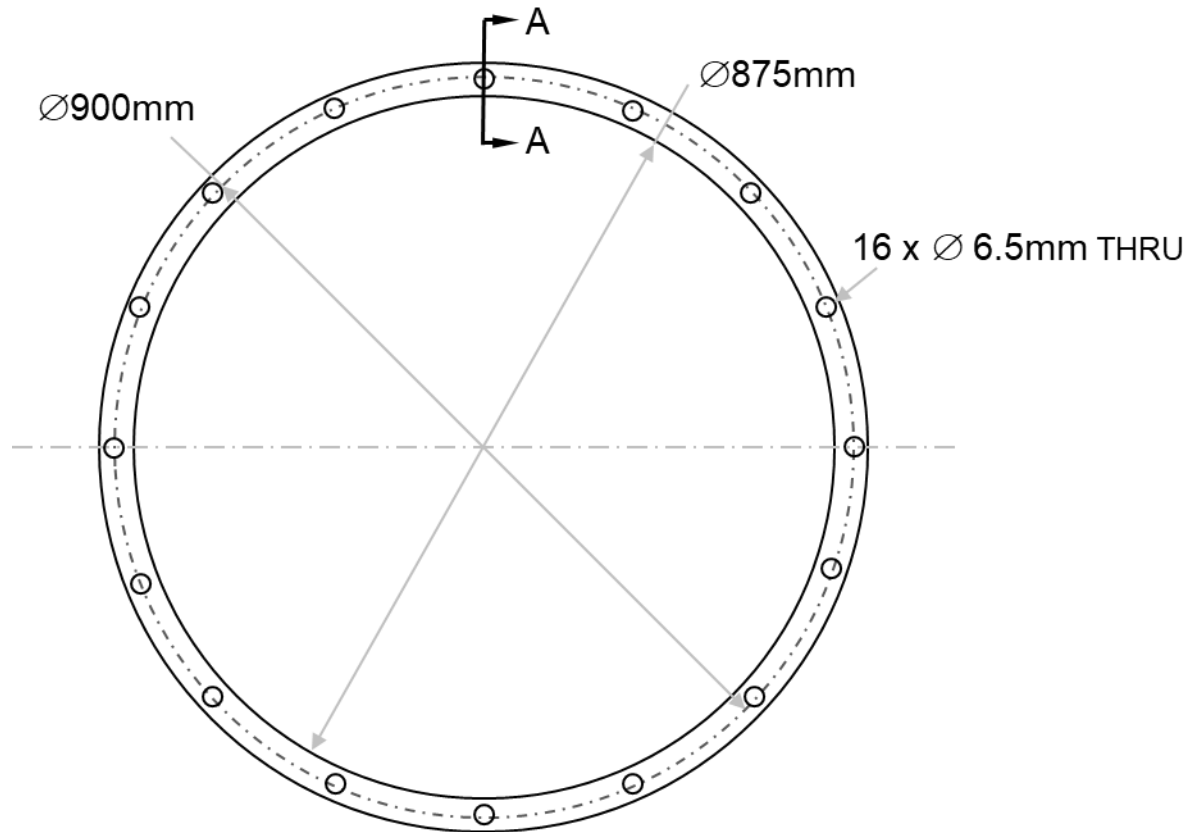
PROBLEM STATEMENT 1

- **Given the interfaces, design a mechanical member which can withstand a given load (Shear & bending moment), but needs to fail after the load exceeds a given value in either shear or bending moment.**

  - The flange radiuses are fixed as 120 mm and 200 mm respectively as shown in figure
  - The length of the design space is fixed as 80 mm as shown in figure
  - Limiting shear load = 300 KN, Limiting bending moment load= 2000 KN-mm
  - Material: Ti6Al4V
 - Other details can be assumed with engineering judgement
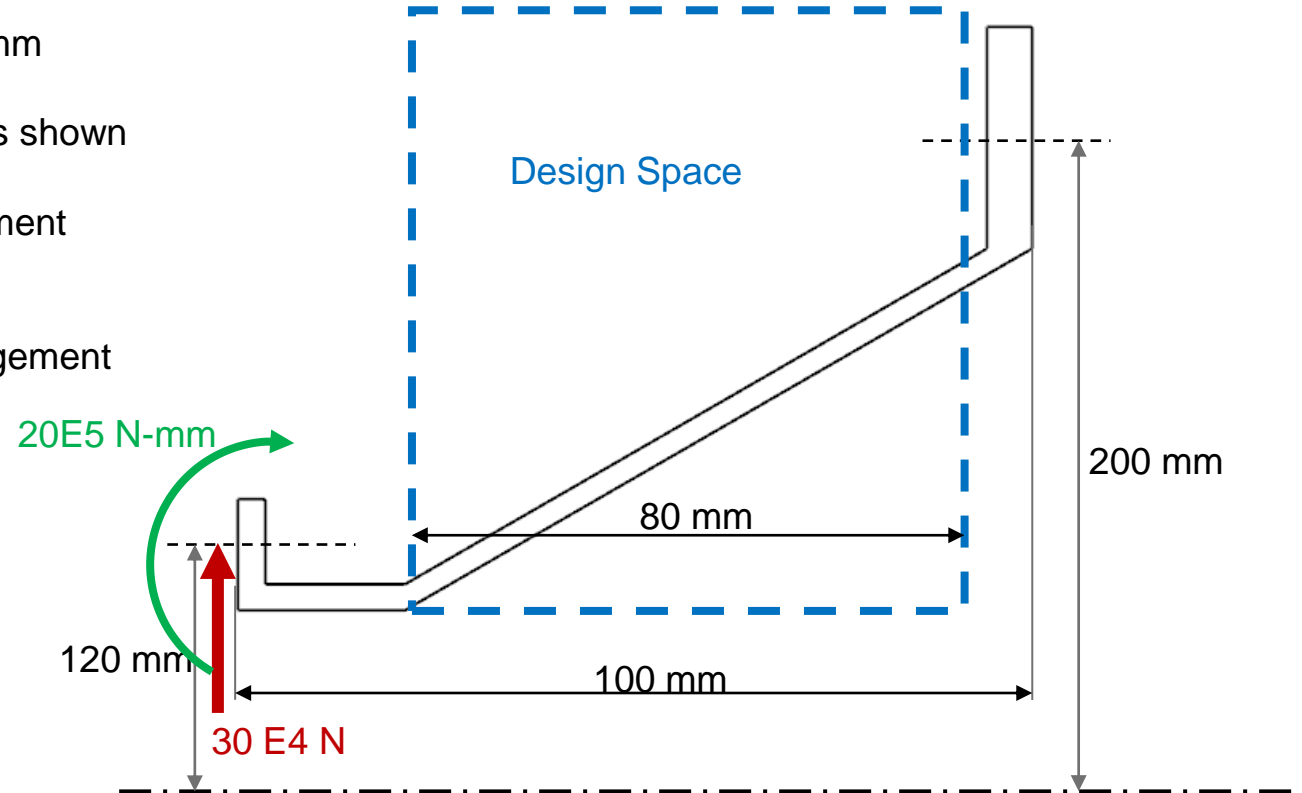
PROBLEM STATEMENT 2

- **Load decoupler: Design a decoupler at the flange connection such that the joint will seize to transfer the moment load across the flange above pre-defined moment load. The flanges should remain connected even after sezing the moment load transfer.**

SECTION A-A

Moment load : 50E6 N-mm

PROBLEM STATEMENT 3

Design an axi-symmetric ring, which can withstand a radially outward static pressure of 310 N/sq. mm applied over a 20 deg on inner radius circumference at 3 locations, 120 deg apart. It can have any deformation but should not break/fail. The design with less mass and without failure is the final objective. Material: INC 625

178 mm dia.

20^0

120^0

20^0

20^0

A

A

33 mm

23 mm

Section-AA
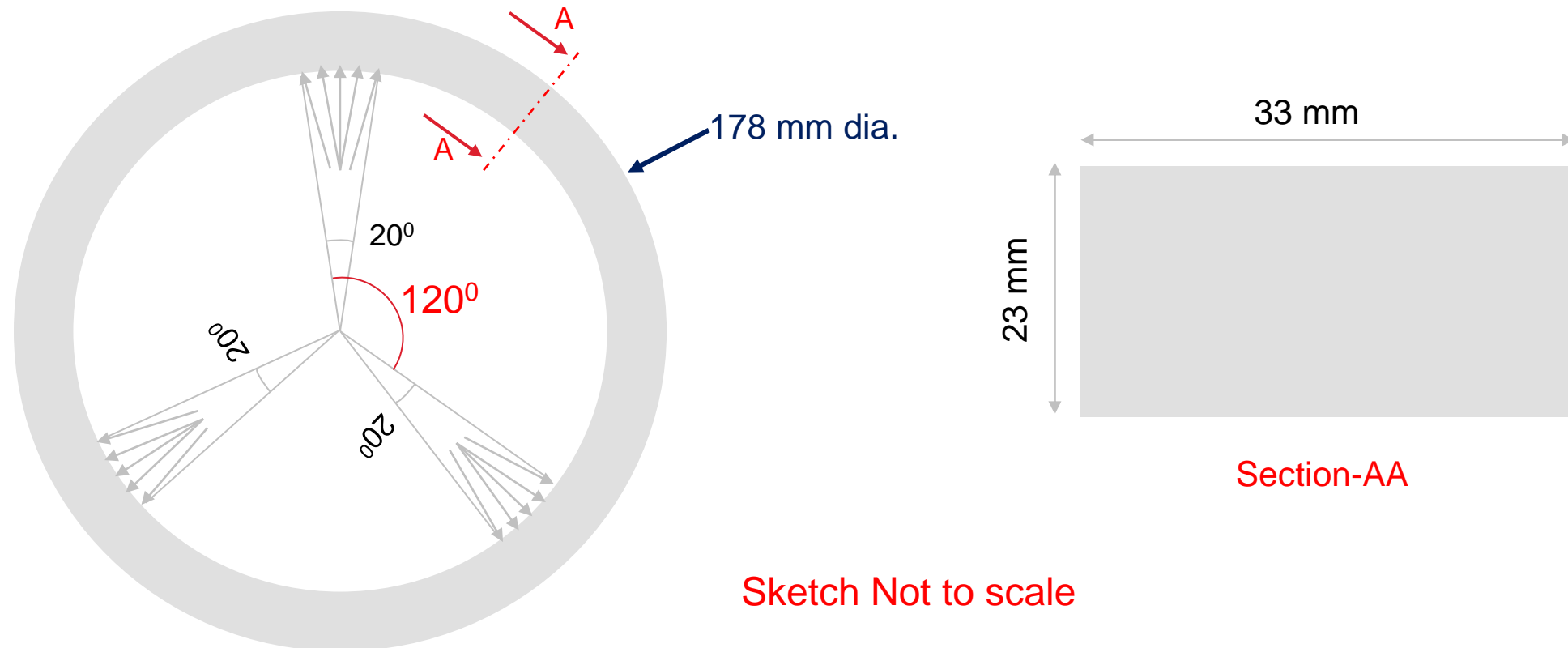
Sketch Not to scale

PROBLEM STATEMENT 4

Develop an AI based tool, which can read pictures of 2D drawings and/or 3D models and should be able to list out the manufacturing steps involved in making the part.

- **Describe the generic framework of the final solution**

- **At least 1 use cases to be shown**

- **For example:**

  - Identify a turning operation from a 2D drawing

  - Identify chamfer or fillet from a 2D drawing