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MADE EASY

MECHANICAL ENGINEERING

Strength Of Material

By-Krishna Sir

- Theory
- Explanation
- Derivation
- Example
- Shortcuts
- Previous Years Question With Solution

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STREGTH OF MATERIAL

OR

MECHANICS OF MATERIAL

OR

MECHANICS OF SOLIDS

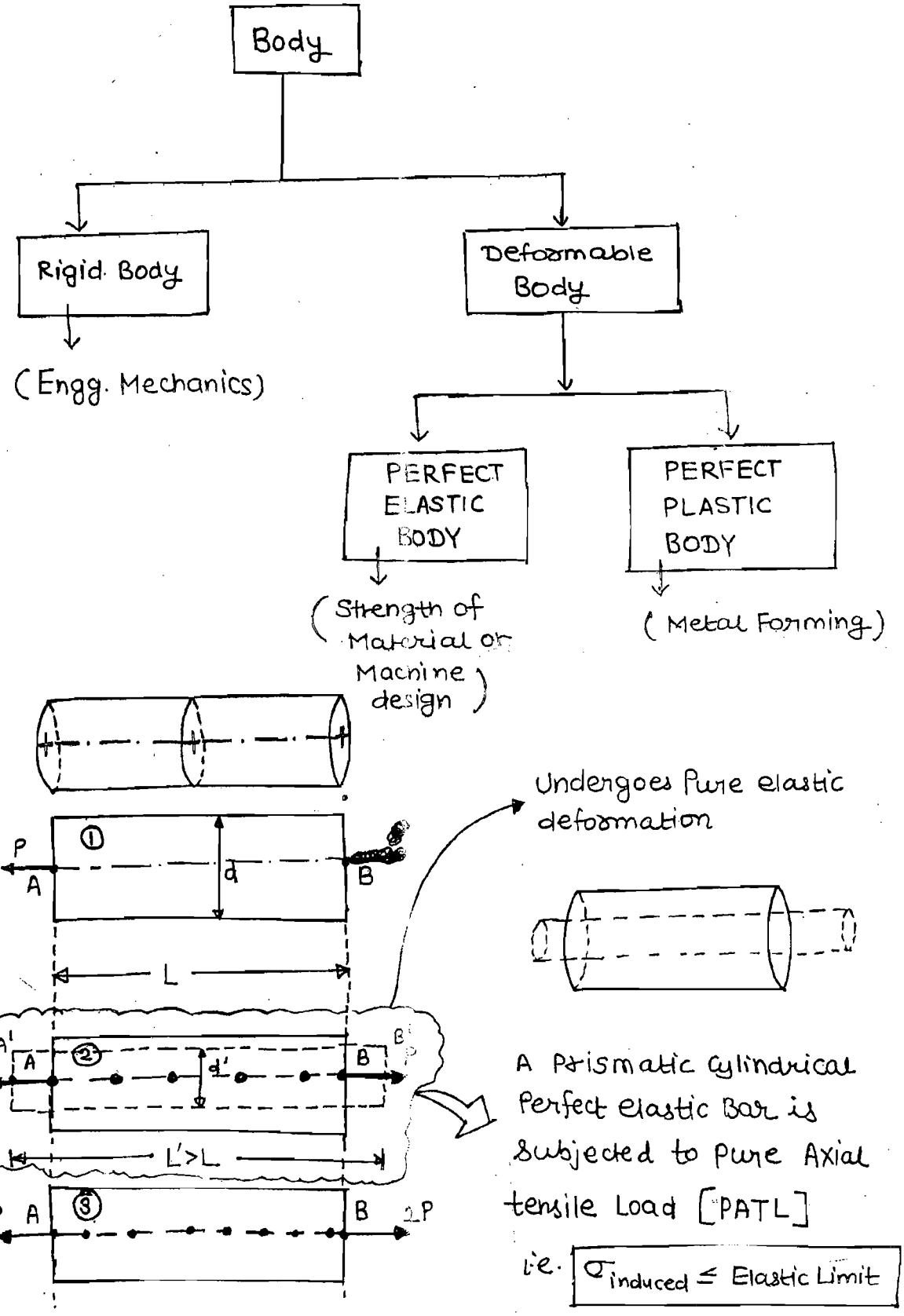
OR

MECHANICS OF STRUCTURE

OR

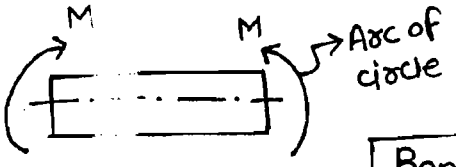
MECHANICS OF PERFECT ELASTIC BODIES

- $\sigma_{induced} \leq$ Elastic Limit $\Rightarrow$ Perfect elastic Body
- $\sigma_{induced} >$ Yield Strength $\Rightarrow$ Perfect Plastic Body



i.e. Shear force = Bending moment = Twisting moment = 0

Axial load = Constant



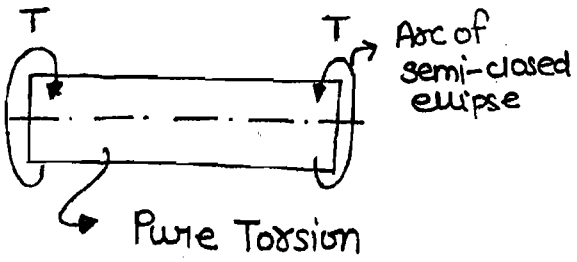
Pure Bending

Bending → Two equal Parallel opposite Couple eccentric axia load

i.e.

Axial Load = Shear Force = Twisting Moment = ZERO

Bending moment = Constant



Torsional Couple → Two equal and opposite Parallel eccentric tranverse shear Load.

Axial Load = Shear force = Bending Moment = zero

Torsional Moment = Constant

Pure Axial Load

$$\sigma_a = \frac{P}{A} \; ; \; \delta_L = \frac{PL}{AE}$$

$$SV = \frac{PL}{E}(1-2\mu)$$

$$FOS = \frac{\text{Failure stress}}{\text{Per Stress}}$$