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**SNS College of Technology, Coimbatore-35.**  
**(Autonomous)**  
**B.E/B.Tech- Internal Assessment -II**  
**Academic Year 2023-2024 (Even Semester)**  
**Fourth Semester**  
**Aerospace Engineering**  
**19AST203– Aircraft Structural Mechanics**

B

Time: 1<sup>1/2</sup> Hours

Maximum Marks: 50

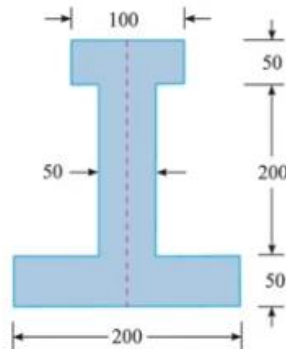
Answer All Questions

**PART - A (5x 2 = 10 Marks)**

		CO	Blooms
1	What causes elastic buckling?	CO2	Rem
2	How do columns normally fail?	CO2	App
3	Define skew load.	CO3	App
4	What is unsymmetrical bending?	CO3	Rem
5	Differentiate pure bending and symmetric bending.	CO3	App

**PART – B (13+13+14=40 Marks)**

			CO	Blooms	
6	(a)	Derive an equation for eccentricity-containing columns.	13	CO2	App
		(or)			
	(b)	Derive an expression for the Euler buckling equation with fixed on both ends.	13	CO2	App
7.	(a)	Figure shows a rolled steel beam of an unsymmetrical I-Section. If a maximum bending stress in the beam section is not to exceed 40MPa. Find the moment which beam can resist. (All dimensions are in mm)	13	CO3	Eva



		(or)			
	(b)	Find the greatest length of a mild steel rod of 30 mm × 30 mm which can be used as a compressive member with one end fixed and the other end hinged. It carries a working load of 40 kN. Factor of safety = 4, $\alpha = 1/7500$ and $\sigma_c = 300\text{N/mm}^2$ . Compare the result with mm Euler. $E = 2 \times 10^5 \text{N/mm}^2$ .	13	CO3	
8.	(a)	Create an expression for the Euler buckling equation with hinges on both ends.	14	CO2	Cre
		(or)			
	(b)	Derive an expression for principal axis method in unsymmetrical bending.	14	CO3	Cre
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**Abbreviations**

Rem- Remember

App-Apply

Ana-Analyze

Eva-Evaluate

Cre-Create