



SNS COLLEGE OF TECHNOLOGY

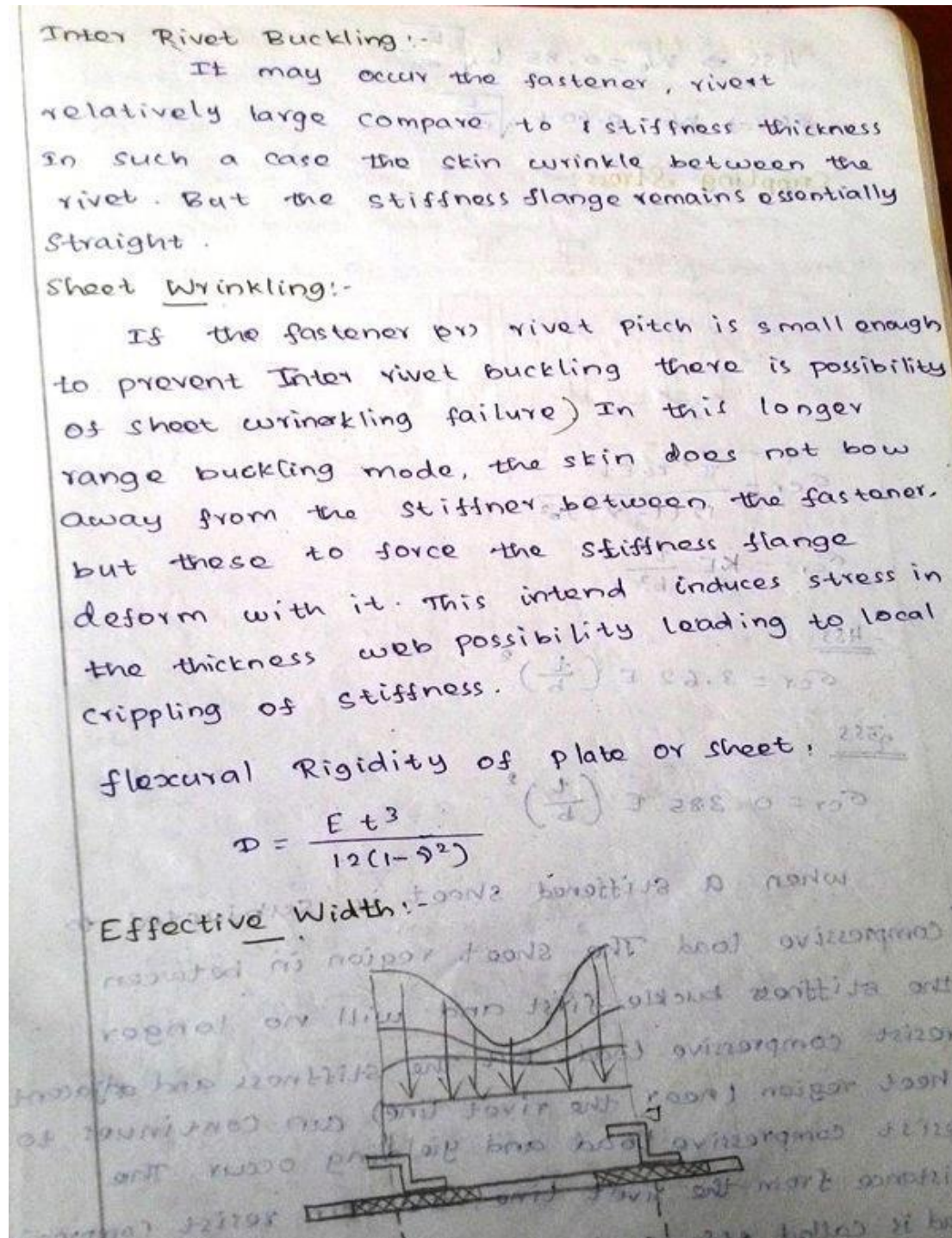
(An Autonomous Institution)



DEPARTMENT OF AERONAUTICAL ENGINEERING

Subject Code & Name: 19AST203 Aircraft Structural Mechanics

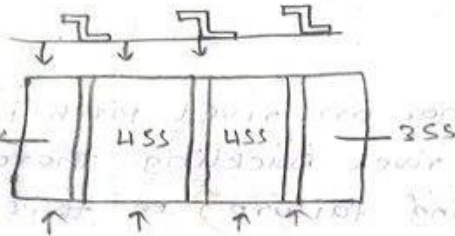
TOPIC: Inter rivet buckling and sheet wrinkling failures- Effective width



$$4SS \Rightarrow W_e = 0.85 t \sqrt{\frac{E}{\sigma_c}}$$

$$\bar{q}SS \Rightarrow W_e = 0.60 t \sqrt{\frac{E}{\sigma_c}}$$

Crippling Stress:-



$$\sigma_{cr} = \frac{\pi^2 k_e E t^2}{12(1-\nu^2)b^2}$$

$$\sigma_{cr} = KE \frac{t^2}{b^2}$$

$$\underline{4SS} \quad \sigma_{cr} = 3.62 E \left(\frac{t}{b}\right)^2$$

$$\underline{\bar{q}SS} \quad \sigma_{cr} = 0.385 E \left(\frac{t}{b}\right)^2$$

when a stiffened sheet is subjected to compressive load the sheet region in between the stiffeners buckle first and will no longer resist compressive load. But the stiffeners and adjacent sheet region (near the rivet line) can continue to resist compressive load and yielding occur. The distance from the rivet line, the skin resist compressive load is called effectively.

