

Please answer all questions.

- 1) Read the case study on the Comet airplane. It was ultimately determined that fatigue stress cycles due to pressurization and depressurization led to the catastrophic failure in the first Comet airplanes. The early catastrophe led to the loss of hundreds of lives and created a world-wide public scare of flying, but it did open the door for Boeing to become the world leader of commercial airliners. Answer the following questions:
 - a. Why was it necessary for a jet airliner to travel at high altitudes?
 - b. What was the initial explanation given for the first Comet crash?
 - c. What was the primary design flaw discovered from the investigative testing after the third crash?
 - d. What was the assumed safety factor of the fuselage walls?
 - e. What was the secondary design flaw discovered from the investigative testing after the third crash?
 - f. What reason could the -56°C environment at high altitude cause failure?

- 2) Dowling Problem 8.12, part (a) only. For yielding, use fully plastic yielding (Figure A.16 (b)).