Recitation_8

Chapter 8
Failure -II
Q1. A fatigue test was conducted in which the mean stress was 70 MPa (10,000 psi), and the stress amplitude was 210 MPa (30,000 psi).
(a) Compute the maximum and minimum stress levels.
(b) Compute the stress ratio.
(c) Compute the magnitude of the stress range.
Q2. A cylindrical 1045 steel bar is subjected to repeated compression-tension stress cycling along its axis. If the load amplitude is 66,700 N, compute the minimum allowable bar diameter to ensure that fatigue failure will not occur.
Q3. A 6.4 mm diameter cylindrical rod fabricated from a 2014-T6 aluminum alloy is subjected to reversed tension-compression load cycling along its axis. If the maximum tensile and compressive loads are 5340 N and -5340 N, respectively, determine its fatigue life.
Q4. By taking which measures, fatigue life can be extended?