



1. Where in the AISC *Specification for Structural Steel Buildings* is the topic of fatigue covered?
  - a. Chapter A
  - b. Chapter J
  - c. Appendix 3
  - d. None of the above -- It is not covered in the AISC *Specification*, because fatigue loading rarely applies to building design.
  
2. True or False: Omer W. Blodgett's statement, "Fatigue is the result of repeated plastic deformation," has been proven incorrect, because fatigue occurs in regions of elastic stress.
  - a. True
  - b. False
  
3. What residual stresses arise from the longitudinal shrinkage of weld metal?
  - a. Compressive stresses in weld; tensile stresses in base metal
  - b. Tensile stresses in weld; compressive stresses in base metal
  - c. Compressive stresses in both the weld and base metal
  - d. Tensile stresses in both the weld and base metal
  
4. Which of the following gives the dominant stress variables for welded details with respect to fatigue?
  - a. Stress range and maximum tensile stress
  - b. Stress range and material specified minimum yield stress
  - c. Maximum tensile stress and notch severity
  - d. Stress range and notch severity
  
5. What is the threshold allowable stress range?
  - a. Stress range where fatigue is not a consideration
  - b. Maximum stress range allowed for a member
  - c. Stress range where indefinite design life of the member will occur
  - d. Stress range considered for low-cycle fatigue



6. Which of the following describes the details associated with fatigue category A?
  - a. Welded or bolted connections, where the fatigue crack primarily forms in the base material
  - b. Welded or bolted connections, where the fatigue crack primarily forms in the weld metal or in the bolt
  - c. Welded connections, where fatigue occurs due to shear stresses
  - d. Unwelded steel (except noncoated weathering steel)
  
7. Which of the following stress categories has a fatigue curve with a smaller slope (for low number of cycles) than the fatigue curves of all other stress categories?
  - a. A
  - b. B
  - c. E'
  - d. F
  
8. True or False: Fatigue performance of base metal at short attachments is due to the presence of the attachment, not due to the loading on that attachment.
  - a. True
  - b. False
  
9. Which of the following would improve the fatigue performance for base metals at short attachments?
  - a. Increasing the length of the attachment
  - b. Decreasing the length of the attachment
  - c. Using welds oriented parallel to the direction of stress in the base metal, as opposed to transverse
  - d. Using welds oriented transverse to the direction of stress in the base metal, as opposed to parallel
  
10. Why does the speaker point out that the base metal is the more restrictive fatigue component in joints with plug and slot welds, despite being in a worse fatigue category than the weld metal?
  - a. Because the weld metal typically has a higher strength than the base metal
  - b. Because fatigue issues in weld metal can be solved by simply increasing the size or number of plug / slot welds
  - c. Because the weld metal can be investigated with ultrasonic testing
  - d. All of the above

