1. Which of the following is NOT a property of interest in ferrous metallurgy?
   a. Ductility
   b. Fatigue limit
   c. Strength
   d. Notch toughness

2. The behavior of steel subjected to a Charpy impact test was discussed while viewing a plot of what two parameters?
   a. Energy absorbed vs. temperature
   b. Energy absorbed vs. stress
   c. Stress vs. strain
   d. Stress vs. temperature

3. Which of the following describes a heat-affected zone?
   a. Alloy atoms that have been embedded between iron atoms
   b. The portion of base metal whose mechanical properties have been altered by the heat of welding
   c. A portion of metal that has undergone changes in alloy content due to heat treatment
   d. The welded portion of a base metal that has higher alloy content than the applied filler metal

4. Which of the following is correct about weld chemistry?
   a. The base metal and the heat-affected zone have essentially the same chemical composition.
   b. The weld metal typically has a different chemical composition than the base metal
   c. The admixture of a production weld contains a combination of the filler metal and the base metal chemical compositions.
   d. All of the above

5. Which of the following is NOT a characteristic of centerline cracks?
   a. Located near the center of a weld bead, not necessarily in the center of the joint
   b. Form quickly after welding
   c. Occur at cold temperatures
   d. Commonly isolated to one layer of a multiple pass weld
6. Which of the following may help reduce the likelihood of forming centerline cracks?
   a. Minimizing the presence of low-melting point elements such as phosphorous, zinc, and copper
   b. Making weld beads that are deeper than they are wide
   c. Making welds with a concave surface
   d. All of the above

7. True or False: Underbead cracks are classified as cold cracks.
   a. True
   b. False

8. Which of the following causes underbead cracking?
   a. Applied or residual stress
   b. Excessive hydrogen
   c. Sensitive material
   d. All of the above

9. Preheat should NOT be used to mitigate which of the following?
   a. Centerline cracking
   b. Underbead cracking
   c. Transverse cracking
   d. Preheat should not be used for any of the above

10. Which of the following approaches was suggested when welding to weathering steels?
    a. Make the entire weld, or cap the weld, using an alloy filler metal
    b. Make a weld that relies upon pickup of alloys from the base metal into the admixture
    c. Both (a) and (b)
    d. Neither (a) nor (b)