



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)

