# STEEL QUIZ

*Steel Quiz*, a monthly feature in *Modern Steel Construction*, allows you to test your knowledge of steel design and construction. All references to LRFD specifications pertain to the 1999 *LRFD Specification for Structural Steel Buildings*, available as a free download at

www.aisc.org/lrfdspec

ASD references pertain to the 1989 *ASD Specification for Structural Steel Buildings*. Where appropriate, other industry standards are also referenced.

If you or your firm are interested in submitting a *Steel Quiz* question or column, contact:

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April's *Steel Quiz* was written by the Steel Solutions Center. This month we have provided the definition of ten terms used in the structural steel industry. Match the term that best fits each definition.

1. A standard dynamic test in which a notched specimen is struck and broken by a single blow in a specially designed testing machine. The measured test values may be the energy absorbed, the percentage shear fracture, the lateral expansion opposite the notch, or a combination thereof.
   a. Charpy V-notch impact test
   b. Drop-weight test
   c. Pendulum fracture test
   d. Magnetic particle test

2. A method of proportioning structural components (members, connectors, connecting elements, and assemblages) such that no applicable limit state is exceeded when the structure is subjected to all appropriate load combinations.
   a. Working stress design
   b. Allowable stress design
   c. Load and resistance factor design
   d. Performance-based design

3. A brace that controls the relative movement of two adjacent brace points along the length of a beam or column or the relative lateral displacement of two stories in a frame.
   a. Chevron brace
   b. Eccentric brace
   c. Nodal brace
   d. Relative brace

4. Location on the web of the corner radius termination point or the toe of the flange-to-web weld. Measured as the *k* distance from the far side of the flange.
   a. Root of the flange
   b. Web thickness
   c. Critical flange thickness
   d. Fillet radius

5. A factor that accounts for unavoidable deviations of the actual strength from the nominal value and the manner and consequences of failure.
   a. Modulus of elasticity
   b. Resistance factor
   c. Torsional constant
   d. Failure constant

6. Section that can develop the yield stress in compression elements before local buckling occurs, but will not resist inelastic local buckling at strain levels required for a fully plastic stress distribution.
   a. Slender section
   b. Noncompact section
   c. Compact section
   d. Super-compact section

7. A short compression-test specimen, long enough for use in measuring the stress-strain relationship for the complete cross section, but short enough to avoid buckling as a column in the elastic and plastic ranges.
   a. Stub column
   b. Slender column
   c. Plate girder
   d. Compact column

8. Gravity-loaded column where connections to the frame (pinned connections) do not provide resistance to lateral loads.
   a. Stub column
   b. Compact column
   c. Leaning column
   d. Wind-resisting column

9. A composite beam for which the shear strength of shear connectors governs the flexural strength.
   a. Non-composite beam
   b. Fully composite beam
   c. Partially composite beam
   d. Compact beam

10. Rotation per unit length due to bending.
    a. Curvature
    b. Bending stress
    c. Ductility
    d. Shear stress

## ANSWERS

1. a
2. c (b is also acceptable, since ASD is also formulated with limit states and also uses ASCE 7 load combinations)
3. d
4. a
5. b
6. b
7. a
8. c
9. c
10. a