1. What are the types of tension members?
   a) Bolts and rivets
   b) Plates and angles
   c) Rods and cables
   d) Beams and columns
   Answer: c) Rods and cables
   Explanation: Tension members can be in the form of rods or cables, used to withstand tensile forces.
2. Which behavior best describes tension members?
   a) Flexural
   b) Compressive
   c) Tensile
   d) Shear
   Answer: c) Tensile
   Explanation: Tension members primarily resist tensile forces, experiencing elongation rather than compression or shear.
3. What factors affect the strength of tension members?
   a) Material properties and temperature
   b) Length and width
   c) Area of the cross-section and loading conditions
   d) Surface finish and color
   Answer: c) Area of the cross-section and loading conditions
   Explanation: The strength of tension members is influenced by factors such as the cross-sectional area and the nature of the loading.
4. In tension member design, what is considered for yielding?
   a) Maximum deflection
   b) Ultimate load capacity

c) Plastic deformation

d) Elastic modulus

Answer: c) Plastic deformation

Explanation: Yielding involves the onset of plastic deformation, where the material undergoes permanent changes.

5. Which failure mode is associated with net section rupture in tension members?

   a) Shear

   b) Compression

   c) Tensile

   d) Buckling

   Answer: c) Tensile

   Explanation: Net section rupture occurs when the net area of the cross-section fails under tensile loading.

6. What is block shear failure in tension members caused by?

   a) Excessive deformation

   b) Shear and tension forces acting simultaneously

   c) Buckling

   d) Corrosion

   Answer: b) Shear and tension forces acting simultaneously

   Explanation: Block shear failure happens when both shear and tension forces act on the member simultaneously, leading to failure.

7. What is the purpose of tension splices in tension members?

   a) To increase the compressive strength

   b) To reduce the material thickness

   c) To join two tension members end-to-end

   d) To enhance the tensile strength

   Answer: c) To join two tension members end-to-end

Explanation: Tension splices are used to connect two tension members together, usually to achieve longer spans or to replace damaged sections.

8. What are lug angles used for in tension members?
   a) To reduce shear forces
   b) To increase torsional stiffness
   c) To provide support against bending
   d) To transfer tensile loads
   Answer: d) To transfer tensile loads
   Explanation: Lug angles are often used to transfer tensile loads from the tension member to the supporting structure.
9. What does the concept of shear lag refer to in tension members?
   a) Uneven distribution of forces
   b) Deformation under compressive forces
   c) Loss of effective area in load transfer
   d) Fatigue failure
   Answer: c) Loss of effective area in load transfer
   Explanation: Shear lag describes the phenomenon where not all parts of a member contribute equally to load transfer, resulting in a loss of effective area.
10. Which of the following is NOT a type of compression member?
    a) Beams
    b) Columns
    c) Struts
    d) Trusses
    Answer: a) Beams
    Explanation: Beams are primarily subjected to bending, while compression members, such as columns and struts, resist compressive forces.
11. What is the basis of current codal provisions for compression member design?

a) Elastic deformation
b) Ultimate strength
c) Buckling resistance
d) Creep behavior
Answer: c) Buckling resistance
Explanation: Current codes emphasize designing compression members to resist buckling, ensuring structural stability under compressive loads.

12. What does the slenderness ratio determine in compression members?
a) Tensile strength
b) Compression strength
c) Flexural rigidity
d) Stability
Answer: d) Stability
Explanation: The slenderness ratio determines the stability of compression members, indicating the propensity for buckling.

13. What type of failure is associated with elastic buckling in compression members?
a) Plastic deformation
b) Permanent deformation
c) Localized yielding
d) Lateral buckling
Answer: d) Lateral buckling
Explanation: Elastic buckling in compression members leads to lateral deflection or buckling without significant plastic deformation.

14. Which curve represents the relationship between axial load and member strength in compression members?
a) Yield curve
b) Stress-strain curve

c) Load-deflection curve

d) Strength curve

Answer: d) Strength curve

Explanation: The strength curve illustrates how the axial load affects the strength of compression members, often showing the ultimate load capacity.

15. What is the primary objective in the design of compression members?

a) Minimizing deflection

b) Maximizing ductility

c) Ensuring stability

d) Reducing material cost

Answer: c) Ensuring stability

Explanation: The main goal of compression member design is to ensure structural stability under compressive loads, preventing buckling or collapse.

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