1. What concept describes the relationship between stress and strain in an elastic body?
a) Newton’s law
b) Hooke’s law
c) Archimedes’ principle
d) Pascal’s law

Answer: b) Hooke’s law
Explanation: Hooke’s law states that the stress applied to a solid material is directly proportional to the strain produced, within the elastic limit of the material.

2. Which of the following is NOT a type of stress?
a) Tensile stress
b) Shear stress
c) Compressive stress
d) Volumetric stress

Answer: d) Volumetric stress
Explanation: Volumetric stress is not typically considered a separate type of stress. It can be derived from the three principal stresses.

3. What are the elastic constants used to describe the behavior of materials under stress?
a) A, B, C
b) Young’s modulus, Poisson’s ratio, Shear modulus
c) Density, Volume, Mass
d) Tension, Compression, Shear

Answer: b) Young’s modulus, Poisson’s ratio, Shear modulus

Explanation: These are the three elastic constants commonly used to describe the behavior of materials under stress.

4. In a composite bar, what type of stress occurs due to the varying cross-sectional area?
a) Tensile stress
b) Compressive stress
c) Shear stress
d) Bending stress

Answer: d) Bending stress
Explanation: In a composite bar with varying cross-sectional area, bending stress occurs due to the unequal distribution of forces along the length of the bar.

5. Which stress arises in a compound bar composed of different materials with varying coefficients of thermal expansion?
a) Thermal stress
b) Shear stress
c) Tensile stress
d) Compressive stress

Answer: a) Thermal stress
Explanation: Thermal stress arises in compound bars due to differential expansion or contraction of the materials when subjected to temperature changes.

6. What is the term for stress that occurs on planes inclined to the axis of the loaded object?
a) Normal stress
b) Shear stress

c) Tensile stress
d) Compressive stress

Answer: b) Shear stress
Explanation: Shear stress occurs on planes inclined to the axis of the loaded object and acts parallel to these planes.

7. What do we call the planes on which the normal stress is maximum or minimum?
a) Principal planes
b) Tangential planes
c) Orthogonal planes
d) Isotropic planes

Answer: a) Principal planes
Explanation: Principal planes are the planes on which the normal stress is maximum or minimum.

8. What is the graphical method used to determine the stresses acting on a plane in a material under complex loading conditions?
a) Hooke’s diagram
b) Euler’s diagram
c) Mohr’s circle
d) Newton’s circle

Answer: c) Mohr’s circle
Explanation: Mohr’s circle is a graphical method used to determine the stresses acting on a plane in a material under complex loading conditions.

9. What term refers to the stresses that act perpendicular to the plane of an object?
a) Normal stresses
b) Shear stresses
c) Tensile stresses
d) Compressive stresses

Answer: a) Normal stresses
Explanation: Normal stresses act perpendicular to the plane of an object, either in tension or compression.

10. What quantity remains constant for a material under an ideal elastic deformation according to Hooke's law?
a) Stress
b) Strain
c) Elastic modulus
d) Shear modulus

Answer: c) Elastic modulus
Explanation: According to Hooke's law, the elastic modulus remains constant for a material under ideal elastic deformation, indicating the material's stiffness.