Lesson 2 Self-Check Questions

1. Ability of a material to deform and then return to its original size and shape after removing the load:
   (a) Elasticity (b) Hardness
   (c) Plasticity (d) Malleability

2. Ability of a material to resist indentation or abrasion:
   (a) Malleability (b) Hardness
   (c) Plasticity (d) Elasticity

3. Ability of a material to sustain a high load for its size:
   (a) Strength (b) Stiffness
   (c) Creep (d) Elasticity

4. A material that requires a high stress to deform a small amount is.....
   (a) Tough (b) Strong
   (c) Stiff (d) Dense

5. Ultimate tensile strength is a measure of the ..... a material can take.
   (a) Energy (b) Stress
   (c) Elastic Limit (d) Shear

6. A material that takes a lot of energy to break has a high level of.....
   (a) Hardness (b) Modulus of Elasticity
   (c) Toughness (d) Poisson's ratio

7. A tough material will exhibit both.....
   (a) Hardness and strength (b) Creep and fatigue
   (c) Strength and deformation (d) Stiffness and elasticity

8. The ability of a material to absorb energy without permanent deformation.
   (a) Strength (b) Resilience
   (c) Toughness (d) Stiffness

9. Percentage elongation is a measure of a material's.....
   (a) Endurance Limit (b) Ductility
   (c) Factor of safety (d) Strength

10. The rate of Creep is higher when you increase.....
    (a) Plasticity and yield point (b) Time and stress
    (c) Fatigue and endurance (d) Temperature and stress

11. Permanent deformation in materials over the time is called _____.
    (a) Creep (b) Elastic deformation
    (c) Plastic deformation (d) Fatigue

12. Figure-out the odd point in the following:
    (a) Proportional limit (b) Elastic limit
    (c) Yield point (d) Rupture point

13. Engineering stress-strain curve and True stress-strain curve are equal up to
    (a) Yield point (b) Elastic limit
    (c) Proportional limit (d) Ultimate strength point

14. Shape of true stress-strain curve for a material depends on
    (a) Strain (b) Strain rate
    (c) Temperature (d) All of the above

15. Toughness of a material is equal to area under _____ portion of the stress-strain curve.
    (a) Plastic (b) Elastic
    (c) Both (d) None

16. Plastic deformation results from the following:
    (a) Twinning (b) Slip
    (c) Both (d) None

17. Fatigue failure occurs when a part is subjected to:
    (a) compressive stress (b) tensile stress
    (c) fluctuating stress (d) uniform stress

18. If stress values are measured during a tensile test, which of the following would have the higher value?
    (a) true stress or (b) engineering stress.

19. If strain measurements are made during a tensile test, which of the following would have the higher value?
    (a) true strain, or (b) engineering strain

20. Which one of the following types of stress strain relationship best describes the behavior of most metals at room temperature:
    (a) elastic and strain hardening (b) perfectly elastic
    (c) elastic and perfectly plastic (d) none of the above.

21. The shear strength of a metal is generally:
    (a) greater than its tensile strength (b) less than its tensile strength.

22. Hardness tests involve pressing a hard object into the surface of a test piece and measuring the indentation (or its effect) that results:
    (a) true (b) false.

23. A metal that can be drawn without fracture is termed:
    (a) malleable (b) elastic
    (c) ductile (d) fusible

24. This metal is: malleable, ductile, it remains pasty when heated and is fairly soft. It is used for making crane hooks, anchor chains and sheet metal workers stakes. This metal is:
    (a) cast iron (b) mild steel
    (c) wrought iron (d) high speed steel

25. A piece of metal is struck with a hammer and easily breaks, we know that this metal is:
    (a) ductile (b) malleable
    (c) tough (d) brittle

26. A steel axle on a car which is subject to cyclical loading suddenly fractures after several years of use. Failure can be best attributed to which phenomenon
    (a) Creep (b) Viscoelastic yielding
    (c) Work-hardening (d) Fatigue n/a

27. The slope of the stress strain plot in a uniaxial tensile test is the
    (a) Shear modulus (b) Young's modulus
    (c) Elastic modulus (d) b and c

28. The nominal failure stress of ductile materials is always lower than its tensile strength because:
    (a) They fail in the linear elastic region.
    (b) They plastically deform.
    (c) They do not neck.
    (d) Such samples usually neck.

POSSIBLE ANSWERS TO SELF CHECK QUESTIONS

1. (a)	2. (b)	3. (a)	4. (c)	5. (b)
6. (c)	7. (c)	8. (b)	9. (b)	10. (d)
11. (a)	12. (d)	13. (a)	14. (d)	15. (c)
16. (d)	17. (c)	18. (a)	19. (b)	20. (a)
21. (b)	22. (a)	23. (c)	24. (c)	25. (d)
26. (d)	27. (b)	28. (c)		