



Chettinad
College of Engineering & Technology
Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

Department of Mechanical Engineering
CE 8395 – Strength of Materials for Mechanical Engineers
Unit I - MCQ Bank

1. The stress induced in a body, when suddenly loaded, is__the stress induced when the same load is applied gradually.
- (A) Equal to
 - (B) One-half
 - (C) Twice**
 - (D) Four times

Answer: Option C

2. A material obeys hook's law up to
- (A) Plastic limit
 - (B) Elastic limit**
 - (C) Yield point
 - (D) Limit of proportionality

Answer: Option B

3. A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400 MPa on the same planes. The maximum normal stress will be
- (A) 400 MPa
 - (B) 500 MPa
 - (C) 900 MPa
 - (D) 1400 MPa**

Answer: Option D

4. After reaching the yielding stage while testing a mild steel specimen, strain

- (A) Becomes constant
- (B) Starts decreasing
- (C) Increases without any increase in load**
- (D) None of the

above Answer:

Option C

5. Principal planes are planes having

- (A) Maximum shear stress
- (B) No shear stress**
- (C) Minimum shear stress
- (D) None of the

above Answer:

Option B

6. If the slenderness ratio for a column is 100, then it is said to be a ___ column.

- (A) Long**
- (B) Medium
- (C) Short
- (D) None of

these Answer:

Option A

7. The torque transmitted by a solid shaft of diameter (D) is (where τ = Maximum allowable shear stress)

- (A) $\pi/4 \times \tau \times D^3$
- (B) $\pi/16 \times \tau \times D^3$**

(C) $\pi/32 \times \tau \times D^3$

(D) $\pi/64 \times \tau \times D^3$

Answer: Option B

8. Young's modulus of a wire is defined as the stress which will increase the length of wire compared to its original length by

(A) Half

(B) Same amount

(C) Double

(D) One-fourth

Answer: Option B

9. True stress strain-curve for materials is plotted between

(A) Load/original cross-sectional area and change in length/original length

(B) Load/ instantaneous cross-sectional area and \log_e (original area/ instantaneous area)

(C) Load/ instantaneous cross-sectional area and change in length/ original length

(D) Load/ instantaneous area and instantaneous area/original area

Answer: Option B

10. A hollow shaft of same cross-section area as compared to a solid shaft transmit

(A) Same torque

(B) Less torque

(C) More torque

(D) Unpredictable

Answer: Option C

11. Two shafts 'A' and 'B' transmit the same power. The speed of shaft 'A' is 250 r.p.m. and that of shaft 'B' is 300 r.p.m.

(A) The shaft 'B' has the greater diameter

(B) The shaft 'A' has the greater diameter

(C) Both are of same diameter

(D) None of

these Answer:

Option B

12. The intensity of stress which causes unit strain is called

(A) Unit mass

(B) Modulus of rigidity

(C) Bulk modulus

(D) Modulus of elasticity

Answer: Option D

13. A vertical column has two moments of inertia (i.e. I_{xx} and I_{yy}). The column will tend to buckle in the direction of the

(A) Axis of load

(B) Perpendicular to the axis of load

(C) Maximum moment of inertia

(D) Minimum moment of

inertia Answer: Option D

14. Strain energy is the

(A) Energy stored in a body when strained within elastic limits

(B) Energy stored in a body when strained up to the breaking of a specimen

(C) Maximum strain energy which can be stored in a body

(D) Proof resilience per unit volume of a

material Answer: Option A

15. The neutral axis of the cross-section a beam is that axis at which the bending stress is

(A) Zero

- (B) Minimum
- (C) Maximum
- (D) Infinity

Answer: Option A

16. A composite bar made up of steel and copper bars of equal lengths are heated through 100°C . The stresses developed shall be

- (A) Tensile in both the material
- (B) Tensile in steel and compressive in copper
- (C) Compressive in steel and tensile in copper
- (D) **Compressive in both the materials**

Answer: Option D

17. The bending moment at a point on a beam is the algebraic of all the moments on either side of the point.

- (A) **Sum**
- (B) Difference
- (C) Multiplication
- (D) None of the

above Answer:

Option A

18. The maximum diameter of the hole that can be punched from a plate of maximum shear stress $1/4$ th of its maximum crushing stress of punch, is equal to (where t = Thickness of the plate)

- (A) t
- (B) $2t$
- (C) **$4t$**
- (D) $8t$

Answer: Option C

19. Within elastic limit, stress is

- (A) Inversely proportional to strain
- (B) Directly proportional to strain**
- (C) Square root of strain
- (D) Equal to

strain

Answer:
Option B

20. Two closely coiled helical springs 'A' and 'B' are equal in all respects but the number of turns of spring 'A' is half that of spring 'B'. The ratio of deflections in spring 'A' to spring 'B' is

- (A) $1/8$
- (B) $1/4$
- (C) $1/2$**
- (D) 2

Answer: Option C

21. The deformation per unit length is called

- (A) Tensile stress
- (B) Compressive stress
- (C) Shear stress
- (D) Strain**

Answer: Option D

22. The shape of cantilever for uniformly distributed load will be

- (A) Straight line
- (B) Parabolic**

(C) Elliptical

(D) Cubic

Answer: Option B

23. The energy stored in a body when strained within elastic limit is known as

(A) Resilience

(B) Proof resilience

(C) Strain energy

(D) Impact energy

Answer: Option C

24. The point of contra flexure is a point where

(A) Shear force changes sign

(B) Shear force is maximum

(C) Bending moment changes sign

(D) Bending moment is

maximum

Answer: Option C

25. The maximum stress produced in a bar of tapering section is at

(A) Smaller end

(B) Larger end

(C) Middle

(D) Anywhere

Answer: Option A