



**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 II - 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. When shear force at a point is zero, then bending moment is \_\_\_\_\_ at that point.

- (A) Zero
- (B) Minimum
- (C) Maximum**
- (D) Infinity

Answer: Option C

8. Elasticity of Mild Steel specimen is defined by

- (A) Hooke's law
- (B) Yield point

**(C) Plastic flow**

(D) Proof stress

Answer: Option C

9. When a bar is cooled to  $-5^{\circ}\text{C}$ , it will develop

(A) No stress

(B) Shear stress

**(C) Tensile stress**

(D) Compressive stress

Answer: Option C

10. If the radius of wire stretched by a load is doubled, then its Young's modulus will be

(A) Doubled

(B) Halved

(C) Becomes four times

**(D) None of the above**

Answer: Option D

11. In order to know whether a column is long or short, we must know its

(A) Ultimate shear stress of the column

(B) Factor of safety

(C) Torque resisting capacity

**(D) Slenderness ratio**

Answer: Option D

12. A masonry dam may fail due to

(A) Tension in the masonry of the dam and its base

(B) Overturning of the dam

(C) Crushing of masonry at the base of the dam

**(D) Any one of the above**

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 of 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  $100^{\circ}\text{C}$ . 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 sum 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. Modulus of rigidity is defined as the ratio of

- (A) Longitudinal stress to longitudinal strain
- (B) Volumetric stress to volumetric strain
- (C) Lateral stress to Lateral strain
- (D) **Shear stress to shear strain**

Answer: Option D

19. In the torsion equation  $T/J = \tau/r = G\theta/L$ , the term  $J/R$  is called

- (A) Shear modulus
- (B) Section modulus
- (C) **Polar modulus**
- (D) None of these

Answer: Option C

20. Strain gauges are used to

- (A) Measure shear strain
- (B) **Measure linear strain**
- (C) Measure volumetric strain
- (D) Relieve strain

Answer: Option B

21. When a rectangular beam is loaded transversely, the maximum compressive stress is developed on the

- (A) Top layer  
**(B) Bottom layer**  
(C) Neutral axis  
(D) Every cross-section

Answer: Option B

22. In a uniform bar, supported at one end in position, the maximum stress under self weight of bar shall occur at the

- (A) Middle of bar  
**(B) Supported end**  
(C) Bottom end  
(D) None of these

Answer: Option B

23. When both ends of a column are fixed, the effective length is

- (A) Its own length  
(B) Twice its length  
**(C) Half its length**  
(D)  $1/\sqrt{2} \times$  its length

Answer: Option C

24. A composite shaft consisting of two stepped portions having spring constants  $K_1$  and  $K_2$  is held between two rigid supports at the ends. Its equivalent spring constant is

- (A)  $K_1 K_2$**   
(B)  $(K_1 + K_2)/2$   
(C)  $(K_1 + K_2)/K_1 K_2$   
(D)  $K_1 K_2/(K_1 + K_2)$

Answer: Option A

25. Slenderness of a column is zero when

- (A) Ends are firmly fixed

(B) Column is supported on all sides throughout the length

(C) Length is equal to radius of gyration

**(D) Length is twice the radius of gyration**

Answer: Option D