Department of Mechanical Engineering
Innovative Teaching Methods

Activity Title	Quiz
Faculty Name/Department	Mr. Tharanikumar L / Mechanical Engineering
Mapped Course Name & Code	CE3491 Strength of Materials
Date	23-03-2023
Benefitted Students (Year / Sem / Dept)	II / IV / Mech.
Topic	Beams and stress distribution due to shearing force and bending moment.
Description	I have tried to make the questions relevant toward the evaluation of the engineer who has a background in Strength of Materials. Saying that, knowing the answers to this quiz doesn't imply that one is capable of building accurate designing, merely that one is heading in the right direction and has a good sense of humor. *(Rule: No passing Questions)*
Course Outcomes (CO)	CO1: Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes. CO2: Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.
Performance Indicator (PI)	1.3.1
Mail ID (for review)	mech.tharanikumar@msajce-edu.in
Activity Photos	
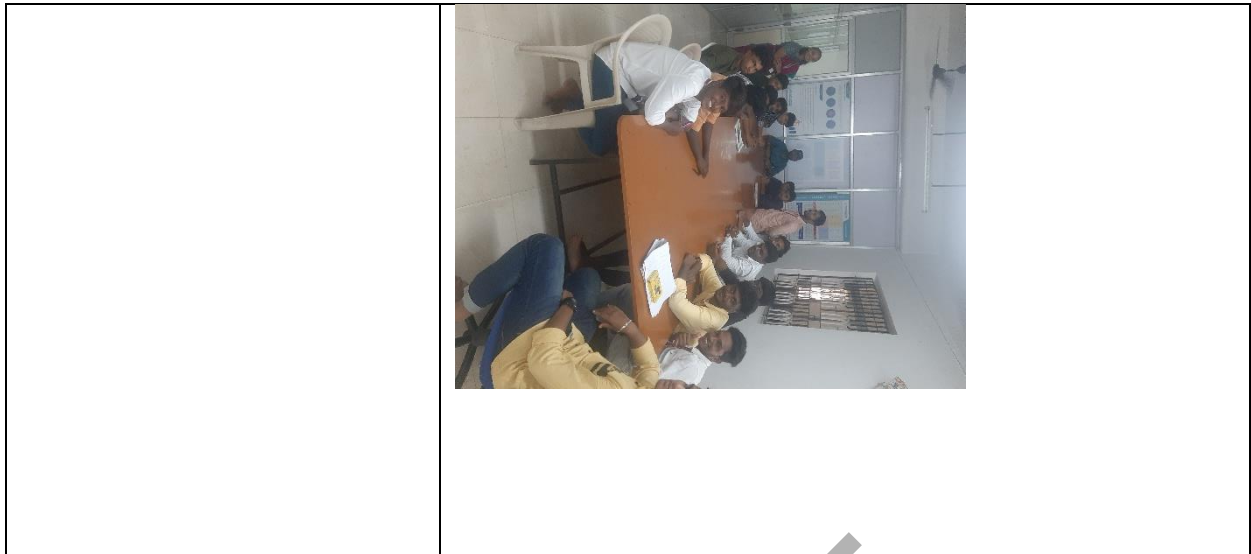
Topics/ Questions:

1. **Young's modulus is defined as the ratio of**
   (A) Volumetric stress and volumetric strain
   (B) Lateral stress and lateral strain
   (C) Longitudinal stress and longitudinal strain
   (D) Shear stress to shear strain

2. **The layer at the center of gravity of the beam as shown in the below figure, will be**
   (A) In tension
   (B) In compression
   (C) Neither in tension nor in compression
   (D) None of these
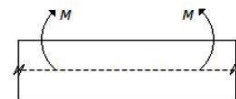
3. **Tensile strength of a material is obtained by dividing the maximum load during the test by the**
   (A) Area at the time of fracture
   (B) Original cross-sectional area
   (C) Average of (A) and (B)
   (D) Minimum area after fracture

4. **The section modulus of a circular section about an axis through its C.G., is**
   (A) $\pi d^2/4$
   (B) $\pi d^2/16$
   (C) $\pi d^3/16$
   (D) $\pi d^3/32$

5. **If a part is constrained to move and heated, it will develop**
    (A) Principal stress
    (B) Tensile stress
    (C) Compressive stress
   (D) Shear stress

6. **The moment of resistance of a balanced reinforced concrete beam is based on the stresses in**
    (A) Steel only
    (B) Concrete only
    (C) Steel and concrete both
    (D) None of these

7. **The property of a material by virtue of which it can be beaten or rolled into plates is called**
    (A) Malleability
    (B) Ductility
    (C) Plasticity
    (D) Elasticity

8. **In case of an under-reinforced beam, the depth of actual neutral axis is _____ that of the critical neutral axis.**
    (A) Same as
    (B) Less than
    (C) Greater than
    (D) None of these

9. **The energy absorbed in a body, when it is strained within the elastic limits, is known as**
    (A) Strain energy
    (B) Resilience
    (C) Proof resilience
    (D) Modulus of resilience

10. **A simply supported beam with a gradually varying load from zero at '*B*' and '*w*' per unit length at '*A*' is shown in the below figure. The shear force at '*B*' is equal to**
    (A) $wl/6$
    (B) $wl/3$
    (C) *0*
    (D) $2wl/3$
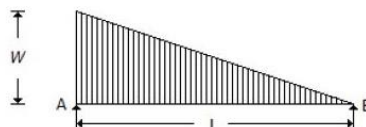
11. **A fletched beam is used to**
    (A) Change the shape of the beam
    (B) Effect the saving in material
    (C) Equalize the strength in tension and compression
    (D) Increase the cross-section of the beam

12 **Percentage reduction in area performing tensile test on cast iron may be of the order of**
    (A) 50%
    (B) 25%
    (C) 20%
    (D) 30%

13. **A beam is loaded as cantilever. If the load at the end is increased, the failure will occur**
    (A) In the middle
    (B) At the tip below the load
    (C) At the support
    (D) Anywhere

14. **The assumption made in Euler's column theory is that**
    (A) The failure of column occurs due to buckling alone
    (B) The length of column is very large as compared to its cross-sectional dimensions
    (C) The column material obeys Hooke's law
    (D) All of the above

15. **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

Marks:

Group Name (if ITM is a group activity)	Reg No.	Topic	Marks
TEAM A	311821114001		20
	311821114002		
	311821114003		
	311821114004		
	311821114005		
	311821114006		
TEAM B	311821114007		30
	311821114009		
	311821114010		
	311821114011		
	311821114012		
	311821114014	Beams and stress distribution due to shearing force and bending moment.	
TEAM C	311821114015		10
	311821114016		
	311821114017		
	311821114018		
	311821114301		
	311821114302		
TEAM D	311821114303		20
	311821114304		
	311821114305		
	311821114306		
	311821114307		
	311821114701		

Outcomes:

Strength of Materials allows you to solve any engineering problem. This means you can verify a Stress distribution over a span or beam sections. So, this benefits you to understand the details stress and strain in simple, compound bars and beam sections. And this improves the student's interest on the Internal Assessment Test.