

Arch 251 – Structural Analysis for Architects – Test #2

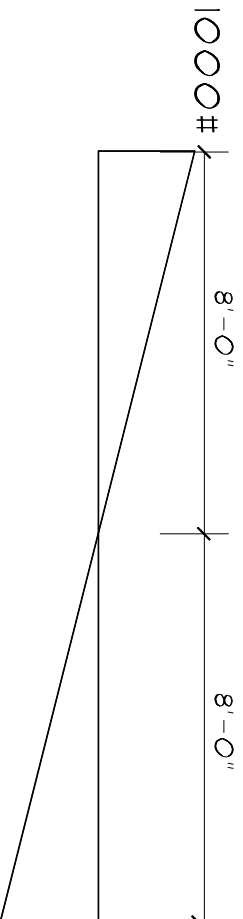
Questions 9 – 19 are multiple-point questions. (2pts. each) _____

Circle only one letter that best represents the correct answer.

9. The point where the bending moment in a beam changes sign is called:
- A. the neutral axis
 - B. the neutral surface
 - C. centroid
 - D. point of inflection

10. The shear diagram for a beam is shown below. What is the bending moment at midspan?

- A. 16,000 ft-lbs
- B. zero
- C. 4000 ft-lbs
- D. 8000 ft-lbs



11. A simple beam supporting a uniformly distributed load over a 16 foot span deflects 1/4 inch. If a beam having the same cross section were to span 24 feet supporting the same load per foot, how much would it deflect?

- A. 1.27 inches
- B. 0.844 inches
- C. 0.563 inches
- D. 0.375 inches

12. The flexural stress in a beam

- A. is compressive in the upper portion and tensile in the lower portion
- B. is maximum at the neutral axis
- C. varies parabolically over the beams cross section
- D. is maximum at the extreme fibers

13. The beam shown has a maximum vertical shear of 5000 pounds. What is the maximum horizontal shear stress? The maximum vertical shear stress?

- A. 69.4 psi, 104.2 psi
- B. 69.4 psi, 69.4 psi
- C. 104.2 psi, 104.2 psi
- D. 104.2 psi, 69.4 psi

