Unit 3 - Week 1

Assignment 1

This due date for submitting this assignment has passed.
As per our norms you have not submitted this assignment.

1) We can say the following about a tensor:
   - It is independent of the coordinate system
   - It depends on whether we are taking dot product, cross product or tensor product
   - Dot product gives a scalar quantity
   - None of the above
   [Due on 2019-06-14, 23:59 IST.]

2) What is the product of a vector with another vector?
   - It's a vector
   - It depends on whether we are doing dot product, cross product or tensor product
   - Dot product gives a scalar quantity
   - None of these
   [Due on 2019-06-14, 23:59 IST.]

3) We can say the following about a tensor:
   - It uniquely relates a set of three orthonormal vectors with another set of three orthonormal vectors
   - Any two lines of its matrix form are orthogonal to each other
   - Its transpose equals its transpose
   - None of these
   [Due on 2019-06-14, 23:59 IST.]

4) What is a treaction?
   - A scalar quantity
   - A vector quantity
   - A second order tensor
   - None of these
   [Due on 2019-06-14, 23:59 IST.]

5) Which of the following statements are true about traction?
   - It varies from point to point in a body
   - At a point, the stress tensor is unique
   - It is a second order tensor
   - Its representation is a matrix
   [Due on 2019-06-14, 23:59 IST.]

6) What can take about stress tensor?
   - It varies from point to point in a body
   - At a point, the stress tensor is unique
   - It is a second order tensor
   - Its representation is a matrix
   [Due on 2019-06-14, 23:59 IST.]

7) Suppose we obtain stress tensors at a point in the body by choosing two different sets of three planes at a point. The stress tensor then obtained using the two different sets will be different. Is it true or false?
   - True
   - False
   [Due on 2019-06-14, 23:59 IST.]

8) The off-diagonal components of a stress matrix represent:
   - Normal components of traction on corresponding planes
   - Shear components of traction on corresponding planes
   - Both normal and shear components of traction
   - None of these
   [Due on 2019-06-14, 23:59 IST.]

9) The non-linear traction on an arbitrary plane at a point requires the following:
   - Information of traction on planes at the same point
   - Information of traction on planes at an adjacent point
   - Magnitude of body force at that point
   - Assumptions of the body at that point
   [Due on 2019-06-14, 23:59 IST.]

10) Suppose we know the value of traction on only two perpendicular planes at a point. Which of the following is (are) true?
    - This information is not sufficient to obtain the value of traction on any other plane at that point
    - We can obtain the value of traction on any plane whose normal lies in the plane formed by the normals of the two given planes.
    - We also need to know the value of traction on other planes at a different point in the body
    - None of these
    [Due on 2019-06-14, 23:59 IST.]

11) He can obtain the value of traction on any plane whose normal lies in the plane formed by the normals of the two given planes.
    - True
    - False
    - None of these
    [Due on 2019-06-14, 23:59 IST.]

12) He cannot obtain the value of traction on any plane whose normal lies in the plane formed by the normals of the two given planes.
    - True
    - False
    - None of these
    [Due on 2019-06-14, 23:59 IST.]