

King Fahd University of Petroleum & Minerals  
DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING  
**CE 203 STRUCTURAL MECHANICS I (Section 2)**  
Second Semester 1435 / 2014 (132)

Name: \_\_\_\_\_  
ID #: \_\_\_\_\_

**Quiz # 5**

Score \_\_\_\_\_  
10

*Rewrite the solution of the problem below from the HW that you just did (without looking at your solution).*

**10–30.** For the case of plane stress, show that Hooke's law can be written as

$$\sigma_x = \frac{E}{(1 - \nu^2)}(\epsilon_x + \nu\epsilon_y), \quad \sigma_y = \frac{E}{(1 - \nu^2)}(\epsilon_y + \nu\epsilon_x)$$

**Hooke's Law:**

$$\epsilon_x = \frac{1}{E}[\sigma_x - \nu(\sigma_y + \sigma_z)]$$

$$\epsilon_y = \frac{1}{E}[\sigma_y - \nu(\sigma_x + \sigma_z)]$$

$$\epsilon_z = \frac{1}{E}[\sigma_z - \nu(\sigma_x + \sigma_y)]$$