

CVG 2141 – CIVIL ENGINEERING MATERIALS

Quiz I

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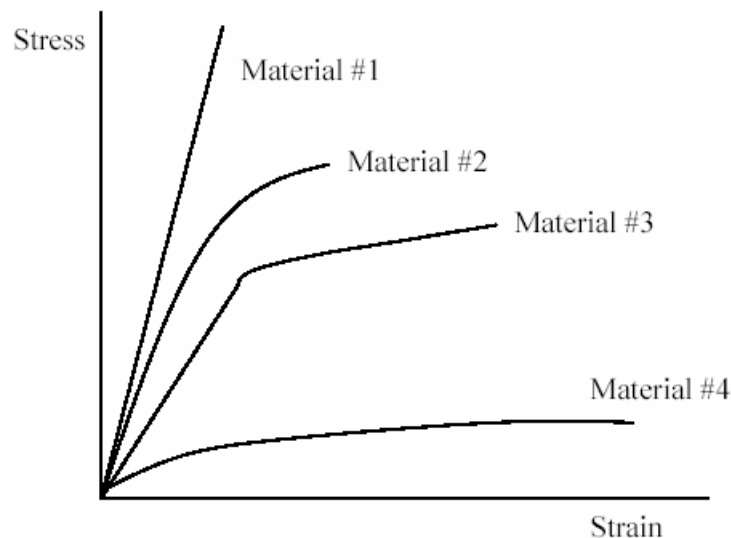
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Time: 10 minutes

1. A cube made with an alloy with dimensions 50 mm x 50 mm x 50 mm is placed in a pressure chamber and subjected to a pressure of 90 MPa. If the modulus of elasticity of the alloy is 100 GPa and Poisson's ratio is 0.28, what will be the length of each side of the cube (to the nearest 1/1000 mm), assuming the material remains in the elastic range?

- (a) 49.955 mm (b) 49.980 mm
(c) 50.000 mm (d) 49.968 mm

Based on the four different stress-strain curves shown below, answer questions 2 to 0:



2. Which material has the highest toughness?

- (a) Material #1 (b) Material #2
(c) Material #3 (d) Material #4

3. Which material has the highest modulus of resilience?
- ☒ (a) Material #1 (b) Material #2
(c) Material #3 (d) Material #4
4. Which material has the highest ductility?
- (a) Material #1 (b) Material #2
(c) Material #3 ☒ (d) Material #4
5. Which material is the most brittle?
- ☒ (a) Material #1 (b) Material #2
(c) Material #3 (d) Material #4
6. What particle size is usually used to separate coarse and fine aggregate?
- (a) 1 mm ☒ (b) 5 mm
(c) 10 mm (d) None of the above

An aggregate sample of 830 g has the following properties: oven-dried mass = 821 g, saturated surface dry mass = 840 g, and submerged mass = 522 g. Based on this information answer questions 7 and 8.

7. What is the moisture condition of the aggregate?
- ☒ (a) Air dry (b) Saturated surface dry
(c) Wet (d) None of the above
8. What is the absorption of the aggregate?
- (a) 2.26% ☒ (b) 2.31%
(c) 38% (d) None of the above
9. What is the surface moisture of the aggregate?
- (a) 1.09% (b) 1.21%
☒ (c) 0% (d) None of the above
10. At what moisture content will a stockpile of sand occupy the greatest bulk volume?
- (a) When the stockpile is fully saturated (b) When the stockpile is completely dry
☒ (c) When the stockpile is partially saturated (d) Bulk volume remains unchanged at different moisture contents