

CE 382 HOMEWORK 1¹

Part A

A normal density concrete has a compressive strength of 50 MPa. A compressive stress is applied to the concrete. This stress is increased in value from zero to 40 MPa and is then reduced to 15 MPa.

- (i) Calculate the compressive strain in concrete at this point in time.
- (ii) The stress is then increased to 45 MPa. Calculate the compressive strain at this point in time.
- (iii) Finally the stress is reduced to zero. Calculate the residual compressive strain that remains in the concrete after the compressive stress has been removed.

Use Hognestad stress-strain model in your calculations and assume linear elastic unloading-reloading rules with initial elastic stiffness before peak strength.

Part B

Solve the problems 1.2, 1.4, 1.6 and 1.7 from your textbook.

¹ **ATTENTION TO ALL STUDENTS**

Assignment Date and Time: March 12, 2012.

Due Date & Time: March 19, 2011 @ 17.30

This homework is distributed electronically via METU ONLINE CE382 website. The students should hand over their finished work via the same way electronically. The homework submissions that do not obey above conditions will be counted as void.