

Name of the Student _____

HOMEWORK

Question 1

What do you understand by the terms *basic creep*, *specific creep*, *drying creep*, and *creep coefficient* ?

Question 2

A series of experiments on identical specimens of Maxwell material were performed such that in each experiment the strain rate was held constant. Sketch a family of stress-strain curves for three cases applicable to experiments with different strain rates: very slow, moderate, and very fast. For each case determine $E(0)$. Discuss the implications of results in practical applications.

Question 3

Using the principle of superposition, consider the following conditions for a 33 MPa compressive strength concrete (*justify your answers*):

- The basic creep of the concrete at 28 days is 300×10^{-6} under a compressive load of 7 MPa. Can you estimate the basic creep of the same concrete at 90 days under a compressive load of 7 MPa?
- The basic creep of the concrete at 28 days is 300×10^{-6} under a compressive load of 7 MPa. Can you estimate the basic creep of the same concrete at 28 days under a compressive load of 11 MPa?
- The basic creep of the concrete at 90 days is 1200×10^{-6} under a compressive load of 27 MPa. Can you estimate the basic creep of the same concrete at 90 days under a compressive load of 7 MPa?
- The basic creep of the concrete at 28 days is 300×10^{-6} under a compressive load of 7 MPa. The drying shrinkage (50 percent R.H.) at 28 days is 100×10^{-6} . Can you estimate the creep of the same concrete at 28 days under a compressive load of 11 MPa and exposed to 50 percent R.H.?
- The basic creep of the concrete at 28 days is 300×10^{-6} under a compressive load of 7 MPa. The drying shrinkage (50 percent R.H.) at 28 days is 100×10^{-6} . Can you estimate the basic creep of the same concrete at 28 days under a compressive load of 27 MPa?