

Open book exam / Online exam

Write on the answer document: your surname, first name and student number.

Question 1.**(15p)**

In some applications concrete with very low consistency is useful.

- What kind of names are used for this kind of concrete?
- Describe couples (min 2) production process in which such a concrete is typically used.
- Describe the main benefits achieved using such a concrete?
- Describe also what kind additional requirements such concretes set?

Question 2.**(15p)**

Assume you are a structural designer. In which kind of cases:

- cast in-situ structure would be clearly more reasonable choice and
 - pre-cast structure would be clearly more reasonable.
- Give two different examples for both cases and describe the advantages of the method in the selected cases.

Question 3.**(15p)**

- Explain why compaction of concrete is needed.
- What kind of risks are connected to the compaction of concrete?
- Which factors are affecting the required compaction time?

Question 4.**(15p)**

Your task is to plan the cast of 30m x 7m pile slab with a thickness of 0.60m.

- Suggest the casting method of the slab? Describe how the casting will be made. Estimate how long the casting will take?
- What is the compaction method you suggest for the slab and how it is performed?
- What are the curing methods you suggest for the slab (consider concreting in summertime)?

Question 5.**(15p)**

The current concrete codes (for example BY65) assumes that self-compaction concrete (SCC) is not causing any differences to the mechanical properties of concrete. In reality some changes may happen. Estimate the effects on the mechanical properties of concrete if:

- Concrete C30/37 is replaced with SCC
- Concrete C50/60 is replaced with SCC
- What kind of changes the replacement is causing at the construction site?