English speaking course

Budapest Architecture ERASMUS course

Department of Mechanics, Materials and Structures

Design of Reinforced Concrete Structures

1st test 13. 10. 2018 group **A**

Name: **Signature:**

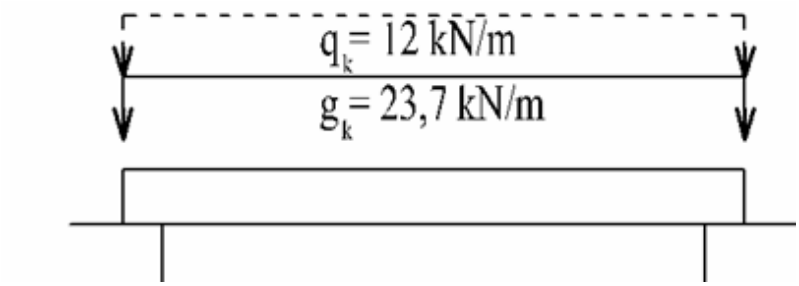
Use the space after the question 1 to 10 to give your answer!

Design of Reinforced Concrete Structures

1st test 13. 10. 2018 45 Minutes 10x12=120 points group **A**

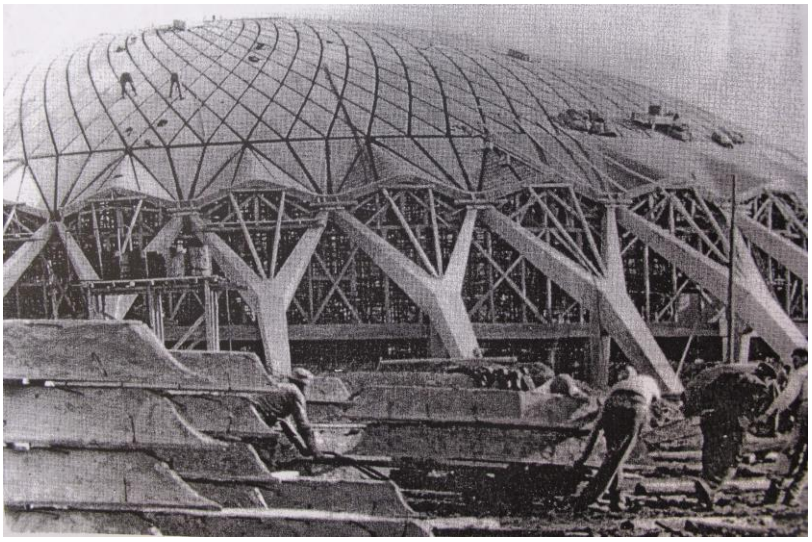
1. P.L.Nervi's ideas about reinforced concrete as a structural material. (How did he characterize it, what special characteristics of reinforced concrete did he emphasize)?

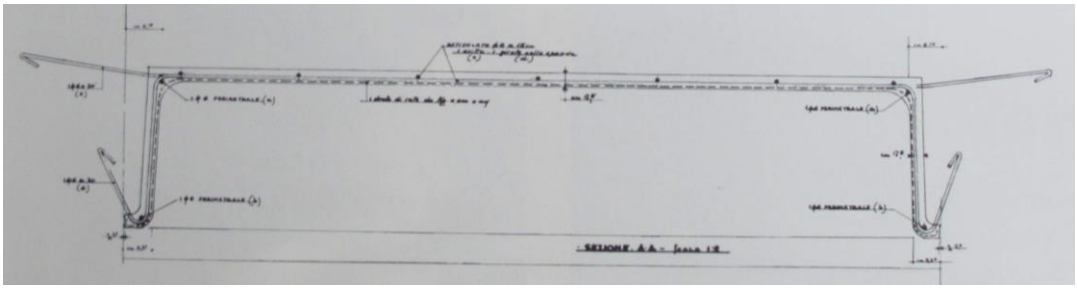
2. sOne simple supported beam is loaded by uniformly distributed load. On side-view of the beam sketch different elements of the shear reinforcement system without calculation!



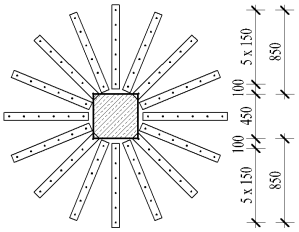
3. By what parameters can serviceability limit state of deflections be checked approximately using design aids tables?

4. What was the fundamental construction idea of Nervi's Small Sports Palace? What can you see on the detail below?





5. Where and for what purpose is the reinforcement used which is indicated on the figure below on plan and axonometric view?



6. What kind of formwork materials and technological solutions are used for the construction of fabric formed concrete structures?

7. Give two early examples of use of concrete or reinforced concrete in buildings in Hungary, indicating period of time and the structural function of it!

8. Aim and classification of different types of foundations

9. Problems emerging in connection with the foundation of the joining neighbouring building. Sketch the way of handling of the problem!

10. Sketch the characteristic cross-section of a mass concrete and of a reinforced concrete strip foundation!

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1st test 13. 10. 2018 group **B**

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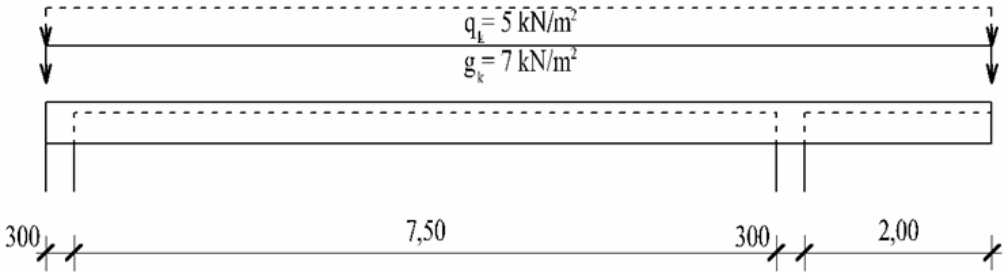
Design of Reinforced Concrete Structures

1st test 13. 10. 2018 45 Minutes 10x12=120 points group **B**

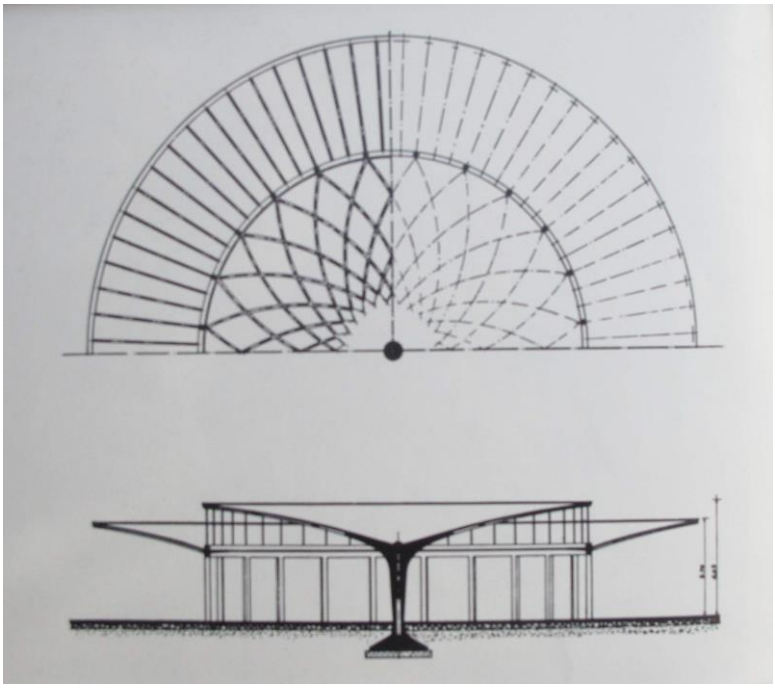
1.-P.L.Nervi's idea about frightening or not people with the sight of loadbearing structures? How could you frighten people with the appearance of loadbearing structures?

2. One simple supported beam with cantilever is loaded by uniformly distributed load. On side-view of the beam sketch – without calculation - elements of the reinforcement system – working in tension - which are to be designed for bending moments!



3. Why should the crack width be limited? Give different limits of the crack width! Which parameter of the structure is controlled by simplified check of the crack width according to design aids tables?

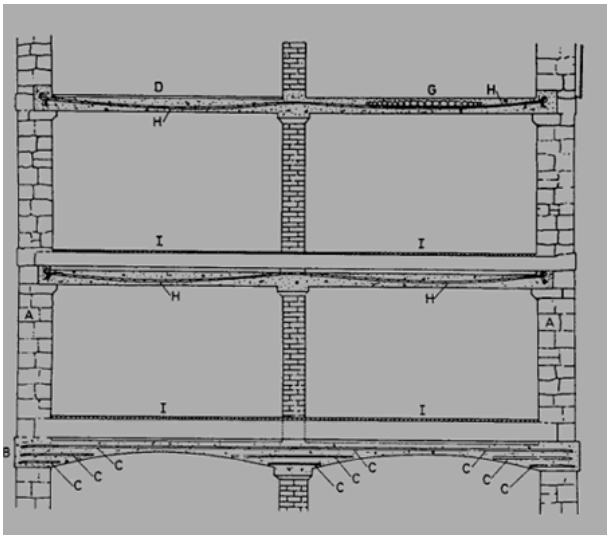
4. The cantilevered roof around the interior of the Kursaal pavilion of P.L. Nervi is very slender structure. Give explanation for it with description of the spatial way of working of this cantilever shell structure!



5. Sketch on a vertical section an integrated and separated slurry wall structural solution!

6. Special design possibilities of fabric formed concrete structures

7. Is the structure shown below an up-to-date or an early rc construction! Can you explain the reason of the curved shape of the steel bars applied in the floor slab?



8. Explain reasons of shaping of the columns designed for the Palace of labour of P.L. Nervi!

9. Characterize micropiles technology and sketch an example of use!

10. What is called "black basin" and "white basin" solution used by designing underground levels of buildings standing in water? Explain by sketching them!