

## Fundamentals of Structures

Questions about Tuesdays lectures in the 2nd test

### A) Definitions

1. Characterize linear structural members!
2. Characterize planar structural members!
3. Define the role of the client and the general contractor in the process of erection of buildings!
4. Definition of working drawings (aim, content, scales)

### B) Laws

1. Explain the *law of equilibrium* on the example of planar loadbearing structures!
2. Explain and show, what do we understand under *material law* of a planar *steel* loadbearing structure!
3. Explain and show, what do we understand under *law of continuity* of planar loadbearing structures! (You can consider as an example any static model with minimum 1 internal joint.)

### C) Requirements

1. Who are the mostly interested participants (from among the client, the users and the public) having connection to the project in fulfilment of the fundamental design requirements listed below?

*requirement*

*the mostly interested participants*

functional requirements  
safety requirements  
aesthetics  
economic requirements of the  
erection and demolition  
economic requirement of operation

### D) Important quantitative data

1. Scales used in different projects (general development project, preliminary project, building permission project, working drawings)

### E) Why-s, reasoning, explanations

1. Why is necessary the general development project?
2. Why is necessary the preliminary project?
3. Why is necessary the building permission project?
4. Why is necessary the „as built,, project?
5. Why is necessary the demolition project?

### F) Listings, classifications

1. Steps of structural design
2. Main characteristics of loadbearing structures
3. Components of the static model of structures
4. Different kinds of structural members
5. Different kinds of external joints of planar structures consisting of linear members (name, graphical presentation)
6. Different kinds of internal joints of planar structures consisting of linear members (name, graphical presentation)

7. Different possibilities of classification of loadbearing structures
8. Fundamental laws of structural analysis
9. Means of environment protection of the natural environment
10. Means of environment protection of the built environment
11. Phases of „life,, of a building
12. Phases of architectural design
13. Content of the general development project (GDP) concerning the construction site and the buildings, that can be erected there.
14. Functions of the general manager or general manager company in the process of erection of buildings
15. What kind of projects are to make during different phases of design, construction and demolition of buildings?
16. List some of the subcontractors that are to contract for the construction of loadbearing structures!
17. Reasons of demolition of buildings
18. Tasks of the building manager (or project manager) and of the technical supervisor during the construction of a building

### **G) Graphical presentations**

1. Static model of simple supported beams with indication of the support reaction components
2. Static model cantilevers with indication of the support reaction components
3. Static model of continuous beams
4. Static model and name of different kinds of arches
5. Draw and name the static model of different kinds of portal frames!
6. Draw the static model of a three-bay multi-storey rigid planar frame with indication of the support reaction components!

### **H) Examples**

1. Examples of pollution of the natural environment
2. Examples of pollution of the built environment