

TECHNOLOGY – ENGINEERING

1. Give the geometric conditions of force balance on a plane.
2. Give the basic parameters characterising building materials in construction terms.
3. List rod structural elements and give a short definition of one of them.
4. What are statically determinate and indeterminate structures?
5. On what the load bearing capacity and deflection of a beam depends?
6. List the advantages and disadvantages of wooden structures.
7. Give the rules of locating and forming expansion joints in buildings.
8. Say when deep foundations are used and give the main methods of constructing such foundations.
9. List the main structural elements of a chosen wooden roof framework.
10. List the types of slab structures you know and discuss the rules of static work, giving the basic parameters of one of them.
11. Describe the concept of reinforcement cover and explain where and why it is used.
12. Characterise pre-tensioned and post-tensioned concrete structures.
13. How many fire resistance classes of buildings are there and how they are determined?
14. Characterise structures of the “Tensegrity” type on a chosen example.
15. Characterise membrane and canopy structures, define their static work and structural and material solutions.
16. List and discuss the properties and applications of concrete, reinforced concrete and cellular concrete.
17. Discuss the applications of stone in civil engineering in history and at present.
18. Explain the differences between a porous, wall clay block and a solid brick.
19. Define two of the following structural elements: binder, spread foundation, foundation slab and knee wall.
20. Give the layers of an example slab on grade and characterize the materials which may be used for the particular layers.
21. Explain the concept of “floating floor” and what materials solutions can be used in it.
22. Describe and characterize an external single-, two- and three-layers wall in traditional masonry technology.

23. Using the examples of technological and materials solutions, discuss the types of partition walls.
24. Characterize the elements and methods of installation of a mullion-transom curtain wall.
25. Discuss beam and block flooring, the elements and materials it consists of and what its span may be.
26. List three selected types of structures of modern timber pitched roofs and define standard widths possible for such solutions.
27. List the layers of roofs in traditional carpentry constructions (rafters) over a usable attic.
28. List three basic types of flat roofs and characterize one of them, listing the layers, under the assumption that they are located over heated areas.
29. List and discuss the types of moisture and waterproofing, pointing to their uses in buildings.
30. List three materials for thermal insulation and characterize in what building envelopes they can be used.
31. Explain the rules of moisture insulation in the plinth wall area in buildings.
32. List and describe at least three types of wood used in construction (different in terms of colour, texture and structure).
33. List three chosen building materials which you perceive as ecological and justify this choice.
34. List the participants of the investment process.
35. List four basic legal acts relevant for the architect.
36. Define the rights and obligations of the designer and discuss two of them.
37. List the parts of a building permit design and name subsequent project stages.
38. Define what the breakdown of costs is and name its elements.
39. Say what elements we need to estimate in order to define the return on investment period.
40. Define the basic surfaces necessary to conduct an economic analysis of a planned investment.
41. Discuss the concept "grey infrastructure".
42. Define the concepts Business Economics and Economy.

43. Give the main technical and materials assumptions of respirable surfaces, as well as examples of such surfaces.
44. Discuss the parameters of thermal insulation of various building envelopes and compare them with one another.
45. Discuss the phenomenon of water vapour surface condensation in building envelopes.
46. Discuss the solutions that limit the risk of overheating interiors.
47. Explain the concept of technical infrastructure of a city or residential district and name its basic elements.
48. Discuss the disadvantages and advantages of various types of municipal sewerage systems.
49. Describe the basic systems of heating rooms in residential and public utility buildings and their impact on designing the rooms.
50. List and discuss in what residential and public utility buildings gravity ventilation may be used.