

Architecture for Society of Knowledge
Faculty of Architecture, WUT 2022
Final exam questions

1. Provide and briefly comment the definition of design according to Wojciech Gasparski
2. Name and very briefly characterize contemporary methods of thought according to Józef Bocheński
3. Sentences: objective and subjective, true and false: name the differences.
4. Describe the term "knowledge" on the ground of ontology
5. Name the differences between declarative and procedural knowledge. Provide example in the field of architecture.
6. Indicate two general areas - ways of incorporating architectural-historic knowledge in design process
7. What are pros and cons of digitalization of data used in design process?
8. What are two main ways of deriving scientific (or, to some extent, design) knowledge? What is the role of data standards in such process?
9. Name several of description standards used in cultural heritage management.
10. Briefly characterize design discipline as creative activity
11. Indicate relation between mass production and raise of design discipline
12. Justify two opposite statements: if architecture is or is not art any more.
13. The global expansion of the internet and resulting connectivity become a significant factor in reformulations of our design conventions. What is its impact on design practice and education?
14. Discuss why practice of design in networked environment is important?
15. Give example of infrastructure that marked and transformed the city.
16. Discuss kinetic architecture.
17. What is an algorithm?
18. Explain the terms: GIS and geomatics
19. Provide the explanation of the following terms: neo-geography and mash-up
20. Explain the term metadata
21. Basic areas of GIS implementation
22. Two basic types of remotely sensed imagery, explain the differences and basic areas of use
23. Basic types of analyses in GIS systems

24. INSPIRE Directive - explanation of the main assumptions
25. Describe the morphological analyses of physical urban structure
26. Provide an example of urban analyses describing non-physical phenomena.
27. Explain the philosophical assumptions of communicative planning theory, provide the name of the main theorist
28. Provide the definition of public participation in urban planning
29. Why the communication in the planning process should be profiled?
30. List and explain the main phases of the planning process with the public participation
31. The possibilities of use of Augmented Reality in the participation process.
32. The main possibilities of application of IT in the public participation in urban planning process.
33. List the reasons why we use robots?
34. Give a definition of the composite. Explain why Portland cement concretes are counted as composites?
35. Describe portland cement binder
36. Explain what a concrete admixture is. Plasticizing and fluidizing admixtures belongs to the most popular ones. What are their main applications?
37. Give classification of corrosion mechanism of metals
38. Material model of composite is a basis for material optimization of its composition. Give a definition of material model and explain the way of its obtaining
39. List three significant features of the fourth industrial revolution and describe one of them in terms of how it can be used in architecture and urban planning
40. What is the Internet of Things (IoT) and how is it used in the field of architecture and urban planning?
41. How do collaborative robots work and why are they considered safe? Where can they be used in the field of architecture?
42. Give a definition of mechatronics. How can it be used in the field of architecture and urban planning?
43. How do technological changes affect and can affect transport in the city?
44. How do technological changes affect and can affect the design process?
45. What is a Building Management System (BMS) - give an example of use.
46. How can modern computer techniques influence the adaptation of the built environment to the needs of the elderly and the disabled?
47. Can you name some potential disruptive changes that can affect the future of cities? Please select one of them and elaborate.
48. Which are the threats and opportunities of driverless mobility in urban planning?

49. Compare pros and cons of a Tramway system and a BRT (Bus Rapid Transit) system.
50. What are the main elements of the spatial structure of the city? Please describe them briefly.
51. What are the main types of urban interiors? What determines the character of urban interiors?
52. List four pairs of opposing values that are especially valued in a democratic system. Choose one of the pairs and describe how the opposition of these values affects the urban planning.
53. Please list examples of movements in art that engage the viewer and discuss one of them
54. How developments in contemporary digital technology changed the approach to art?
55. Please, discuss the presence of art in public life, using the example of the relationship between art and religion or art and politics
56. Give a definition of ergonomics and a division into its three main streams/specialties, each related to specific human characteristics?
57. What is universal design? Give a definition and 7 main principles of this design approach (the answer may refer not necessarily to scientific definitions but also to design examples).
58. What is anthropometry and how does it relate to stair design principles?
59. What is the building shape factor A/V ? How does it affect the energy efficiency of a building?
60. What is a building material passport? What kind of information can be stored in building material passports? How Material Passports could track the circularity of a building element?
61. Please briefly describe the scope and contents of one of the following environmental certifications: LEED, BREEAM, WELL. Point out what is the main difference in general approach when making a choice to use one of them.
62. Identify five of the philosophical frameworks that provide the basis for contemporary architectural theory. Choose one architect or work of architecture that you consider exemplifies the ideas manifested in each.
63. Several concepts can be derived from conceptual frameworks that provide the basis for contemporary architectural theory. Among them are: palimpsests; eidetic imaging; syntax and semantics; the haptic perception; discipline and control; virtuality and possibility. Select one of the above and define it in your own words.
64. Contemporary issues and problems in architecture and urbanism can be derived from theoretical thought. Two prominent ones are James Corner's effort to use architectural drawings as part of the process of discovery, and Greg Lynn's proposal to understand architecture as a response to dynamic forces rather than an expression of permanence and stasis. Choose one and identify how that author's position is relevant to design today.

65. Give an example of architectural aesthetics strongly inspired by mathematics or resulting from calculations and experiments.
66. The development of mathematics and geometry allowed the design and construction of more complex or efficient forms. Give an example that proves this thesis.
67. Describe the role of an experiment in the design process and give examples. Explain how computers can help with experimenting.
68. Describe principles of ADO (architectural design optimization). Give an example of an optimization algorithm and explain its principles.
69. Trace the roots of computational design and information architecture.
70. Please describe what is a multi-objective optimization problem and give an architectural example.
71. Please describe what is Solar Envelope and give an example of a tool which allows to calculate it for a selected plot.
72. Please describe what is Daylight Autonomy (DA) and give an example of a tool which allows to calculate it for a space in a building.
73. Describe three types of manufacturing methods used in digital fabrication and name related CNC tools. Discuss how these can be employed in architectural design, supplement your answer with relevant cases.
74. Branko Kolarevic noted that digital fabrication is "a direct digital link between what can be conceived and what can be built". Explain the meaning of this statement.
75. Describe the aggregative character of the relationship between tools, materials, and design strategies in the digital fabrication environment.
76. Discuss on selected examples the impact on the living conditions of residents and the architecture and urban planning of 19th-20th century cities had the development of modern technical infrastructure (e.g. water supply and sewage network, gas and electricity)
77. What types of public buildings do you know, whose architecture was developed in the 19th century in connection with new needs in the field of retail and the development of means of communication – give examples.