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# MASTER'S DIPLOMA EXAMINATION ARCHITECTURE 2021/22

## THE SCOPE OF EXAM ISSUES

### 1. ARCHITECTURAL DESIGN

#### ARCHITECTURAL DESIGN OF COMPLEX FACILITIES, THEMATIC LECTURE

1. Elements of architectural composition according to Juliusz Żórawski.
2. The role of the architect as a participant of the design and construction process. Stages of the design and construction process.
3. The canon of proportion on the example of: the golden ratio, the Vitruvian man, the Modulor. Construction rules, examples.
4. The Pritzker Prize laureates of the last decade. Characteristic features of work of two selected laureates.
5. The Bilbao Effect. Characteristic features of the phenomenon and analogous examples.
6. Sustainable design in architecture.
7. Architecture of the 19th, 20th and 21 centuries. Movements, trends, main representatives and their completed works (presented chronologically).
8. High-rise buildings. Completed works, competitions, fire safety requirements.
9. Design principles of present-day service and office buildings in the light of current regulations of "Building code" and "Regulations on technical conditions to be met by buildings and their location".
10. Standards and guidelines of flat design. Single- and multi-family buildings.
11. Quality vs quantity order in architecture (measurable and unmeasurable features of the form: relation between aesthetics and energetics).
12. Form cohesiveness. Desired and undesired features of architectural and urban structures.
13. Form cohesiveness vs energy consumption of form functioning.
14. Techno-logics. Clear forms, language of architectural space. Organisation levels of architectural structure: building-street-town.
15. Empiricism and superimposition in architectural design.
16. History of hospital service. The evolution of form and function.
17. Functional layout of the operating theatre.
18. Design principles of selected rooms in healthcare buildings.
19. Explain the terms: evidence-based design and patient-centred design.
20. List and characterise briefly selected works of healthcare facilities.
21. Discuss the problem of housing architecture design for senior citizens.
22. Discuss the potential of using new technologies in design for ageing populations.
23. Discuss research methods used in design of healthcare facilities.

#### ARCHITECTURAL DESIGN OF WORKPLACES

24. Functional and spatial layout in workplace facilities.
25. Development plan of a workplace facility.
26. Construction systems used in workplace facilities.
27. Sanitary rooms in a workplace.
28. Break rooms in a workplace.
29. Fire precaution issues in a workplace facility.

30. Design of workstations (ergonomics and health and safety regulations).
31. Thermal conditions in design of workplace facilities.
32. Materials in design of industrial buildings.
33. Daylight use in workplace facilities.

#### INNOVATICS

34. Construction site of the future - prognoses for the next two decades.
35. Digital manufacture and new technologies.
36. 3D printing - characteristic features and use.
37. Parametric and generative design.
38. Parametric design - the most significant works.
39. New materials in architecture.

#### INDUSTRIAL DESIGN

40. The most important representatives of present-day industrial design - characteristics of their design work.
41. Materials in industrial design.
42. Marc Newson, Karim Rashid, Zaha Hadid - the most significant projects in industrial design.
43. Oskar Zięta - characteristic features and the most important works.
44. Industrial design in the Polish People's Republic period - characteristic features and present-day reminiscences.
45. Alessi - brand characteristics and cooperation with STARchitects.
46. Ergonomics of selected examples of industrial design facilities.
47. Design stages in industrial design.
48. Architects as industrial designers.
49. Materials and technologies of industrial design vs safety of items usage.
50. Reusing, recycling, upcycling - product life cycle in the context of the designer's responsibility.

#### RESEARCH IN ARCHITECTURAL DESIGN PROCESS

51. Historical research
52. Qualitative research.
53. Simulation research.
54. Correlation research .
55. Experimental research.
56. Study case.

#### MARKETING

57. Portfolio – form and destination.
58. Moodboard. Example usages.

## 2. URBAN PLANNING

#### PLANING AND MANAGEMENT OF SUSTAINABLE DEVELOPMENT OF TOWNS

59. Sustainable Development Goals (SDGs) in key documents (resolutions, charters, declarations - discuss chosen ones).
60. Green areas in towns and cities (meaning, functions, types, systems).
61. Water in towns and cities (principles and methods of rainwater management, strategies of flood risk management)
62. Public space in creating inclusive, sustainable and climate change resistant towns and cities.
63. Revitalisation and regeneration of towns and cities (aims, processes, examples).
64. Challenges of 21st century towns and cities and conceptions of sustainable development of towns. Domestic town policy.
65. Mitigation and adaptation of towns to climate change (explain terms, principles, tools and actions).

## STUDY OF THE SPATIAL MANAGEMENT OF A COMMUNE

66. Sustainable development of rural and suburban areas (problems, challenges, solutions).
67. The most important elements of conditionings of the commune development study.
68. The most important elements of arrangements of the commune development study.

## SPATIAL PLANNING LAW

69. The system of spatial planning in Poland (effective documents at different levels of planning, dependences between them, assets and drawbacks of the system).

## REGIONAL PLANNING

70. The theory of urban planning - fundamental definitions (urban planning, deurbanisation, suburban sprawl, re-urbanisation).
71. The development of urban planning notion in Poland and in the world (ideas, authors and their accomplishments - discuss on the basis of selected examples).
72. Endo- and exogenic conditionings of urban development of Polish towns and cities.
73. Settlement layout (classification, theories, thresholds and development barriers).
74. Transport in urban planning (railway, automotive, air, water).
75. Define the terms: traditional town, urban agglomeration, conurbation, metropolis, metropolitan area.
76. Define and explain the notion of sustainable development and how it is executed, list documents related to the implementation of this notion.
77. Define the Athens Charter. State the number of such documents, explain what they contained, when and where they were created.
78. Define the term of revitalisation and explain how it is implemented in towns and cities.
79. List and characterise significant examples of the revitalisation of post-industrial areas in Europe.
80. The meaning of cultural values in urban planning composition - views and viewpoints.
81. Public spaces in towns - types and their spatial, social and economic role.
82. 21st century cities - discuss and characterise development trends.

## 3. HERITAGE CONSERVATION, ART THEORY AND HISTORY

83. What is meant by preservation of historic buildings? Aims and principles of preservation practice.
84. What do restoration works of historic buildings consist of? What preparatory works have to precede restoration works?
85. Two main doctrinal principles of after-war reconstruction of Polish towns and cities introduced by Jan Zachwatowicz.
86. Present a definition of the historic building and methods of its conservation. What do they include and what scope of works do they comprise?
87. Main principles of reconstruction of towns and cities in Western Europe destroyed during World War II.
88. Eugène Emmanuel Viollet-le-Duc - conservation works, doctrine and methods of handling historic buildings.
89. Alois Riegl - his conservation doctrine and criteria for historic buildings classification.
90. The Venice Charter from 1964 and main principles of conservation and restoration.
91. Reconstruction of towns and cities in Poland after 1956 on the basis of selected examples.
92. The order of actions in the process of conservation and restoration of historic buildings.
93. Principles of architectural inventory of historic buildings.
94. Architectural research in conservatory practice.

## 4. STRUCTURAL AND ENGINEERING QUESTIONS

### ACOUSTICS, LIGHTING

95. Acoustic flaws in rooms and methods of their correction.
96. Methods of design of multifunctional rooms in terms of acoustics.
97. The problem of reverberation in room acoustic design (function, building's cubature)
98. Acoustic criteria of finishing materials selection in room design.

99. Light and matter interaction - types and characteristics of light reflection.
100. Illuminating criteria.
101. Theory and principles of architecture illumination.
102. Design principles of present-day lighting systems - assumptions, standardisation, calculations and lighting parameters.
103. Construction of coverings with spans over 20 m.
104. Construction of underground tiers.
105. Skeleton and masonry constructions - applications.
106. Thermal and waterproof insulation of architectural details.
107. The cantilever - the role in composition and construction of the elevation.
108. Post and lintel as elements of the elevation.
109. Building usage safety - dimensional aspect.
110. The elevation in building construction layout.

## **5. PERCEPTION PSYCHOLOGY**

111. Principles of perception in art and architecture.
112. Perception theory and its use in urban planning (main theories and their representatives who influenced the shape of town landscape).

## **6. PROJECT COST MANAGEMENT**

113. Discuss the methodology of total cost in the building life cycle according to Life Cycle Costing (LCC), including the aim and stages of analysis, main cost categories, and fundamental parameters.
114. List and indicate differences between static and discount methods of investment profitability assessment.
115. List and characterise methods of defining the value of project work, including quotes, indicators, data range.
116. Principles of making and calculation methods of construction works, elements of construction cost estimates, types of costs in construction.