Załącznik do Uchwały Rady Programowej Kierunku Studiów Environmental Engineering and Protection nr 2/2022 z dnia 1 kwietnia 2022 roku

Final, master exam question list for

Environmental Engineering and Protection

1. Describe difference between photochemical and classic smog.
2. Element properties and their occurrence in liquid phase.
3. Sorption phenomenon - processes included in it.
4. Elements of surface (open ditch) drainage systems and the task of each ditch type.
5. In-situ and ex-situ methods of soil and groundwater remediation.
6. The role of the sorption process in soil and water remediation.
7. Controlled drainage – Drainage water Management, Climate adaptive drainage – description of the system, operating principles, conditions of applicability, profits.
8. Pillars of sustainability in civil engineering – concepts, definitions, relationship between them.
9. Self-compacting concrete – definition, benefits of its use, examples of possible applications.
10. Cement as a key issue of CO2 emission. Eco-friendly cements – distribution according to European standards, benefits of their use.
11. Small wastewater treatment systems in view of EN 12566 standard.
12. What is the hydrologic cycle and what are its basic elements?
13. What kind of elements are measured in the river channel to determine the discharge?
14. Explain what is the rating curve and how it is constructed.
15. What is cross-section area, average depth and hydraulic radius?
16. Describe Chezy and Manning equations.
17. Draw and explain the water surface profiles for mild and steep slopes.
18. Discuss the steps for using GIS software in hydrologic modeling.
19. List and discuss three selected vector analysis tools.
20. List and discuss the basic data types in a GIS environment.
21. What do spatial, spectral, and temporal resolutions stand for remote sensing?
22. What is NDVI and why is it useful?
23. Please describe the spatial planning documents at local level in Poland.
24. Please point out the main development challenges for Polish regions.
25. Elements of surface (open ditch) drainage systems and the task of each ditch type.
26. Controlled drainage – Drainage water Management, Climate adaptive drainage – description of the system, operating principles, conditions of applicability, profits.
27. Types and roles of wetlands in the environment – advantages and disadvantages.
28. Wastes: definition and classification.
29. Natural sources of toxic substances in the agricultural environment.
30. Cite four characteristics of hazardous waste and explain each of them.
31. Hydrologic cycle.
32. Different measures of biodiversity.
33. Describe the two main causes of global warming and the role of carbon dioxide in intensifying the greenhouse effect.
34. Describe the physics of the greenhouse effect.
35. Main causes of biodiversity loss on Earth.
36. Describe methods applied for lake recultivation.
37. Describe consequences of eutrophication and degradation of freshwaters in rural areas.

38. Protection of lakes and rivers in rural landscape.
39. Types of environmental impact assessment and their legal basis.
40. Methods and techniques used in EIA.
41. Types of bioindicators – examples.
42. ICP Vegetation and ICP Forests.
43. Parameters needed to calculate maximum retention in the Soil Conservation Service Curve Number (SCS-CN) method.