Final Exam Questions

M.Sc. Of Environmental Engineering

**Air Quality Project Practice**

1. The emission and the immission (definition, measurement, recording and actions to reduce emissions).
2. The extension of air pollution, local, regional and global air pollution problems (acidic rain, ozone layer depletion, climate change, smog)
3. The environmental impacts of air pollutants (for humans, animals, plants and built environment)
4. Evolution of emissions of air pollutants (in the light of legislation and EU directives)
5. Major international air pollution protection conventions (including flexibility mechanisms)
6. Air chemistry monitoring networks (global and European monitoring networks)
7. Processes and characteristics of atmospheric solid particles. (equivalent diameter definition, determination of efficiency of total and fraction separation)
8. Industrial dust extraction technologies (equipment, principles of dimensioning and efficiency improvement)
9. Application of adsorption in air purity protection (concept of adsorption, process, adsorption isotherms, adsorbents, adsorber)
10. Application of absorption and condensation in air purity protection (concept, process, equipment)
11. Reducing the SO2 content of flue gases (dry, wet, semi-dry processes)
12. Reducing the NOx content of flue gases (dry, wet, semi-dry processes)

Final Exam Questions

M.Sc. Of Environmental Engineering

**Water Protection and Wastewater Treatment Project Practice**

1. Effect of the sewer system on the operation of the wastewater treatment plant. Unified and separated sewer systems.
2. The major units and processes of biological wastewater treatment plants. Key metrics (PE, residence time, etc.)
3. Physico-chemical removal procedures in wastewater treatment. (sedimentation, flocculation, coagulation, etc.) Solving the problem of sludge bulking.
4. Procedures for removing organic matter in wastewater treatment.
5. Nitrogen removal procedures for waste water treatment.
6. The process of excess biological phosphorus removal.
7. Anaerobic degradation processes in wastewater treatment.
8. Operation of sequenced batch reactors.
9. Design of a biological wastewater treatment plant. (reactor size, recirculation, flow calculation.)
10. Qualitative, quantitative characterization of raw water sources. Quality standards for raw and drinking water, potential contaminants for water resources.
11. Presentation of technological steps of drinking water purification, details of processes.
12. Disinfection of drinking water and wastewater. Disinfection by-product effect.
13. The structure and characteristics of the surface water quality monitoring system.
14. New requirements arising from the introduction of the Water Framework Directive (WFD) in the field of water quality assessment of water bodies.

Final Exam Questions

M.Sc. Of Environmental Engineering

**Environmental Impact Assessment Project Practice**

1. Difference between environmental impact assessment and strategic environmental assessment
2. Description of the environment (environmental elements, size and timing, physical and socio-economic environment)
3. Comparison aspects of project alternatives (locations, scales, operating conditions, baseline / no action)
4. GIS Support Tool for EIA (Overlay Maps)
5. Definition of environment, effect factor, environmental impact, impact processes, impact area, background effect, control environment
6. Principal scheme of environmental impact assessment (block diagram), process
7. Mapping impact processes and impact process diagrams
8. Types of environmental impacts (with examples)
9. Checklists and matrices as impact assessment methods
10. Quantitative methods in the impact assessment

Final Exam Questions

M.Sc. Of Environmental Engineering

**Waste management and Reclamation**

1. The concept of waste, its types, the determination of their hazardousness.
2. The theme, principle and regulation of waste management.
3. Determination of waste generation and composition
4. Methods of collecting and transporting waste.
5. Landfill processes, landfill operations, closure, after-care.
6. Biological treatment of waste.
7. Treatment of waste by physical and physical-chemical operations.
8. Thermal treatment of waste.
9. Mechanical and biological waste management methods, advanced waste management systems.
10. Reclamation definition – purpose
11. Permission of reclamation - required document and info for authority
12. One step reclamation – layers
13. Two step reclamation – layers
14. MBT plant - purpose, ma in steps of technology
15. RDF/SRF - definition, quality parameters, the use of RDF/SRF
16. Measuring methods of the SRF/RDF parameters