

Examples of possible questions on the short written exam, March 2012

The questions are wholly based on the textbook by Tyler Miller and Spoolman (ed 16 and 17)

- What are the levels of organization of matter in ecosystems ?
Describe the levels. (The cell is the basic level.)
- “The limiting factor principle” is an important factor in regulating population growth. Define more precisely the “limiting factor principle” and discuss different limiting factors.
- What is meant by abiotic and by biotic factors in an ecosystem.
- All organisms in an ecosystem are consumers or producers. Describe different types of consumers and producers and how they are related to each other.
- Describe the food web and important energy quantities related to the food web.
- What is meant by “net primary productivity” ?
- Describe one of the following matter cycles in the biosphere: hydrological cycle, carbon cycle, nitrogen cycle, phosphorous cycle, and sulphur cycle.
- Which conditions are necessary for evolution of a population by natural selection?
- What is meant by “ecological niche”?
- What is meant by “speciation “ , “extinction” , “biodiversity”?
- Describe briefly the scientific “theory of evolution”.
- What governs the change in population growth?
- What is meant by “carrying capacity” ?
- What characterizes J-curves and S-curves?
- Discuss different reproductive patterns.
- Describe the water resources on earth and more specifically the freshwater resources.
- The resources of and the flow and purification of groundwater.
- How do “we” use the world’s fresh water?
- What causes freshwater shortages?
- How can we increase freshwater supplies ?

Comments on one of the following options:

- build dams
- move surface water
- withdraw groundwater
- convert salt water
- reduce waste of water
- towing icebergs

- What causes flooding ?
- Describe different types of water pollution and their sources?
- What are the effects of different types of water pollution ?
- Describe freshwater pollution problems in lakes, groundwater, oceans.
- How can one prevent and reduce surface water pollution?
- What should be done with sewage sludge ?
- How can drinking water be purified in developing countries?
- Make a comprehensive description of the energy supply of the world.
- What are the resources and reserves on
 - oil
 - natural gas
 - coal
- How can the energy efficiency be improved?
- Discuss different renewable energy resources. Their possible drawbacks and their advantages.
- What is the global status of windpower?
- Discuss hydrogen as an global energy carrier. Resources and environmental effects of hydrogen.