

## Dr. Peterjohn's portion of the 2016 final exam

- 1) Fifteen questions.
- 2) Comprehensive questions on material covered by past exam questions (the questions, however, will not be the same).
- 3) No questions on material contained only in outside readings.
- 4) Know terms, rules-of-thumb, major concepts, and how to apply them. The topics covered include, but are not restricted to, the following:

The structure and nature of ecology as a scientific discipline

The structure and nature of ecosystems

Energy and energy balances

Nature and laws governing EMR (Terrestrial vs. Solar radiation, Stephan-Boltzmann Law, etc.)

Components of a planetary energy budget

Spatial patterns of radiation inputs and outputs

The circulation of the atmosphere and ocean (patterns, driving forces, consequences, etc.)

Pattern of general circulation of surface winds.

Hadley cell circulation

Coriolis effect

Ocean gyres

Thermohaline circulation

Global changes in atmospheric CO<sub>2</sub> and its importance aside from its contribution to the greenhouse effect.

Climate change (causes, evidence, predictions, & possible consequences)

Main features of the biomes (including the ocean) covered in class.

No questions on soils.

Do not need to be able to list in order of productivity, rainfall, soil carbon, etc.

Mean-value method and how to apply it.

System concepts

Mean residence time

Sources vs. sinks

Closed vs. open systems

Dynamic equilibrium

Positive & negative feedback loops

Global water, C, N, & P cycles

Importance, processes, connections to environmental change (N saturation, eutrophication, greenhouse gas production, dead zones, etc.)

Energy flow, trophic levels & trophic structure

10% rule-of-thumb

Biological magnification