Indian Institute of Technology Delhi
Centre for Energy Studies
2017-2018
ESL 330: Energy, Ecology and Environment

Minor-I Examination
Duration: 60 minutes

Marks: 20
29 August 2017

Answer all questions

1. Answer the following in brief:
   i. Define autecology and synecology.
   ii. Describe four characteristics of a community ecology.
   iii. Define cohorts and demography in population studies.
   iv. Define eutrophication.
   v. Explain r-K strategies in terms of survivorship curves.
   vi. Explain the generation of photochemical smog.

   [1+2+1+1+3+2]

2. Draw the trophic level diagram and the role of energy flow in it. [3]

3. Estimate the %COHb expected for a one-hour exposure to 35 ppm. [2]

4. It took about 300 yrs for the world's population to increase from 0.5 billion to 4.0 billion. If we assume exponential growth at a constant rate over that period of time, what would that growth rate be?

   [2]

5. A lake with constant volume 10^7 m^3 is fed by a pollution free stream with a flow rate 5 m^3/s. A factory dumps 0.5 m^3/s of a non-conservative waste with concentration 10 mg/lt into the lake. The pollutant has a reaction rate coefficient of 0.20/day. Assuming the pollutant is well mixed in the lake, find the steady state concentration in the lake?

   [3]