EASTERN UNIVERSITY, SRI LANKA THIRD EXAMINATION IN SCIENCE 2005/2006 (AUG-SEP. 2007)

FIRST SEMESTER

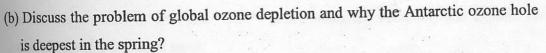
REPEAT

PH 306 - ENVIRONMENTAL PHYSICS

Time: 01 hour.

Answer ALL Questions.

- 1. (a) Define the following without any diagrams and equations:
 - i. Ionosphere
 - ii. Tropopause
 - iii. Surface energy balance
 - iv. Solar constant



- (c) Using the Beer-Lambert law, calculate the percentage increase in 260nm UV radiation reaching the Earth's surface at the South Pole when the "ozone hole" is 50% that of the normal concentration $(3.2 \times 10^{16} \, m^{-3})$. Assume that the photoabsorption cross-section for 260nm UV light is $10^{-21}m^2$ and that the stratosphere is 40km deep.
- 2. (a) Investigate what contribution could be made by renewable energy sources to our country's energy requirements.
 - (b) Discuss between the purpose and mode of action of a "flat plate collector" and a "photovoltaic cell", each of which has been designed for exposure to solar radiation.
 - (c) Choose three different insulating materials used in modern buildings. For each material, use the physical properties of the material and the principles of energy transfer to explain why the material acts as a good thermal insulator.