EASTERN UNIVERSITY, SRI LANKA

THIRD EXAMINATION IN SCIENCE - 2010/2011

SECOND SEMESTER (SPECIAL REPEAT)

(JUNE 2014)

PH 306 ENVIRONMENTAL PHYSICS

Time: 01 hour.

Answer ALL Questions

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01. List the four principal layers of the atmosphere in order from the Earth's surface upwards. Within each of these layers, state how the temperature varies with height.

(a) The density of air is 1.2 kg/m^3 at the Earth's surface. Calculate the height of the column of air required to exert a pressure of 1 atmosphere (1×10^5 Pa) at its base.

(b) At constant temperature the pressure of the atmosphere decreases exponentially with height according to the equation:

$$P = P_0 \exp(-kh)$$

where P_0 is the pressure at the Earth's surface.

Given that P at a height of 5 km is approximately $0.5P_0$ estimate the height at which P will have fallen to $0.125P_0$.

02. (a) Define and briefly comment on the following terms

i. Solar constant
ii. Planetary albedo
iii. Black body radiation
iv. Ozone depletion
v. Green house effect

(b) Explain the importance of renewable energy and list five renewable energy sources which can be used in Sri Lanka.