



THE OPEN UNIVERSITY OF SRI LANKA

M.Sc. In Environmental Sciences Level 08 (2016-2017)

NEP 2217-Climate Change

Final examination 2017

Date: 19th November 2017

Time.13.30.hrs to - 14.30 hrs

Answer Any Four (04) questions

1. (i) Briefly explain the relationship of the axis tilt to the seasons of the Earth.
 - (ii) What is the significance of the Tropic of Cancer and the Tropic of Capricorn?
 - (iii) Describe three processes by which heat can be transferred from one place to another. Provide a common example of each.
 - (iv) Why is convection much more important than conduction in the transport of heat from the earth's surface into the atmosphere?

2. (i) Explain the nature of solar radiation at the top of the atmosphere and describe the manner in which incoming radiation loses about 50% of its incident energy before reaching the surface.
 - (ii) What are the Sun's harmful radiation, why these radiation not reaching the earth's surface?
 - (iii) What is the significance of the "greenhouse effect" for temperature at the earth's surface?
 - (iv)) For the entire globe, why must incoming solar radiation balance outgoing infrared radiation? What would be the implications for global climate if this energy balance did not prevail?

3. (i) What are Greenhouse Gasses? Why they are called greenhouse gasses?
 - (ii) If water vapour is the key greenhouse gas why are man-made emissions so important?
 - (iii) Why it is necessary to have an inventory of greenhouse gas emissions to estimate the extent of global warming?
 - (iv) Global temperature rise is leading to sea level rise. Briefly explain the main contributions to the sea level rise.

4. (i) Most atmospheric aerosols are products of processes occurring at the earth's surface. Identify several of these processes.

(ii) Present several examples of how "minor" constituents (gases and aerosols) of the atmosphere play important roles in the functioning of the environment.

(iii). What is meant by enhanced greenhouse effect?

(iv). Briefly explain the contribution of human activities to the Climate Change

5. (i) Explain the term "Emission Scenarios". How do you develop emission scenarios and explain its use in predicting global warming.

(ii) For the Fifth Assessment Report of the IPCC, the scientific community has defined a set of four new scenarios. What is the name given to these scenarios and how are they identified?

(iii) Explain briefly the use of above scenarios in future projections.

6. (i) Why is International cooperation necessary to significantly mitigate climate change impacts?

(ii) What is the primary international forum for climate negotiations? Briefly explain the ultimate objective of it.

(iii) Signatories to the above forum are split into three groups name these groups and explain their roles.

(iv) What was the first binding step toward implementing the principles and goals provided by the above forum? Briefly explain the main feature of it.