TTHE OPEN UNIVERSITY OF SRI LANKA

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

NEP 2207 /NEP2217 Climate Change

Final Examination 2016

Date: 04th November 2016 Time.09.30 hrs to 12.30 hrs

Answer any Four (04) Questions only

1. (i) Explain why the temperature decreases with height in the troposphere?
(ii) What is the heat source for the stratosphere?
(iii)Explain why daylight is continuous north of Artic Circle and absent in south of Antarctic Circle in June Solstice?
(iv) Explain why the significance of an atmospheric gas or aerosol is not necessarily related to its relative abundance??

2 (i) Name 6 properties or conditions of the atmosphere which together specify the physical state of the weather or climate at a given place. What is the name given to these properties?
(ii) Name 3 Physical conditions which control the climate at a given place and briefly explain how these conditions control the climate?
(iii) Briefly explain how conduction and convection occur at the earth surface and the atmosphere?

3 (i) There are two primary forms of radiation relevant to the energy balance properties of the climate system. Name these and explain their role in the energy budget.
(ii) How the aerosols enhancement affect the energy budget?
(iv) Explain the occurrence of maximum and minimum temperatures of the earth from the above energy budget.
(iii)Out of very short wave radiation (high energy) Explain why only UV-a radiation reaches the earth surface?

4 (i) Explain the natural greenhouse effect which has operated for billions of years.
(ii) Briefly explain the benefits of the natural greenhouse effect to the life existing on the earth. (iii) What has happened to this greenhouse effect during the industrial era? Briefly explain the reasons.

5 (i) Name Natural Greenhouse Gas Constituents. How many of the Natural Greenhouse Gas Constituents are undergoing well-documented increase in concentration due to human activity? Name those constituents.
(ii) What is meant by the New Greenhouse Gases?
(iii) There is noticeable reduction in some of above gasses since 1987, why?
(iv) Describe the factors that need to be considered for calculation of Green House Gas emissions.

6 (i) Explain the main sources of GHG emissions how do you reduce these emissions by introducing certain control measures at these sources?
(ii) Describe measures available for enhancing absorption of carbon dioxide having same effect as mitigating emissions.

7 (i) What is the ultimate objective of the United Nations Framework Convention on Climate Change?
(ii) In December 1997 Conference of Parties adopted the Kyoto Protocol. Explain the main features of the Protocol.
(iii) Explain how the provisions in the Protocol could assist developing countries in achieving sustainable development.