**The Open University of Sri Lanka**

**Faculty of Engineering Technology**

**Industrial Studies (Agriculture) Programme of Study**

**Final Examination 2013/2014**

**AEI6137 – Impact of Climate Change on Water Resources**

Date            : 17/08/2014
Time            : 09.30 a.m. – 12.30 p.m.
Duration        : Three (03) hours

Registration Number:.................................................................

**Section 02 – Answer any four (04) out of the six (06) questions. You may use answer books and/or sheets to answer this section.**

1)  a) Discuss the interactions between the atmospheric carbon dioxide concentration and the following factors: temperature rise, water availability, and soil

    b) Total radiant energy flux from the sun just outside the earth's atmosphere is 1.36 kW $m^{-2}$. The radius of the earth is $6.35 \times 10^3$ km. Consider that the Stefan-Boltzmann constant ($\sigma$) is $5.67 \times 10^{-8}$ W $m^{-2}$ $K^{-4}$.

    i)   If the earth absorbs all the incoming solar energy, calculate the total radiant energy flow from the sun.

    ii)  Assuming that the earth radiates the absorbed energy as heat at 100% efficiency, calculate the average surface temperature of earth.

2)  Discuss the effects of global warming. Describe how activities related to agriculture and forestry enhance the emission of greenhouse gases.

3)  Discuss the effects agriculture on climate change. Describe the actions that can be taken to overcome these challenges.

4)  Describe the hydronomic zones in a river basin. Discuss water conservation strategies that can be applied in these zones.

5) Briefly describe the components of the hydrological cycle that are affected by climate change using local and/or global examples.

6) Challenges caused by climate change on water resources are increasing at an alarming rate. Explain how water resources in Sri Lanka would be managed to face these challenges.