G10 Science: Class 15 Homework

1. What is the difference between weather and climate? [2 marks]

2. List the weather characteristics of today. Write down the date and include the highest and lowest temperature, amount of precipitation, humidity, and atmospheric pressure. [5 marks]

- 3. The average daily maximum temperature in central Egypt reaches 40 degrees C in the summer. There is very little rain less than 10mm per year. The lack of rain means that there is little vegetation in this part of the country. [2 marks]
 - a. In what climate zone does central Egypt belong?
 - b. Is there any part of North America that belongs in the same climate zone?
- 4. The sun shines continuously on Earth. Explain why Earth does not keep warming up. [2 marks]

5. Why is the climate in Nigeria (near the equator) warmer than the climate in Greenland (near North Pole)? [3 marks]

6. What role do large bodies of water play in Earth's climate system and the flow of thermal energy? [3 marks]

- 7. How does each of the following affect a region's climate?
 - a. Altitude [1 mark]
 - b. Nearness to a mountain range [1 mark]
 - c. Which side of a large lake a location is on (i.e. upwind or downwind from the lake) [2 marks]
- 8. Explain why the greenhouse effect is important to life on Earth. [2 marks]

9. Explain how greenhouse gas molecules, in contrast to oxygen and nitrogen molecules, trap infrared radiation. [3 marks]

10. Scientists and governments are working to reduce ozone levels in the troposphere, but they are trying to protect ozone levels in the stratosphere. Explain why this is not a contradiction.
[4 marks]

11. Predict what might happen if plants were able to absorb more carbon dioxide. How will this affect the carbon cycle and the production of greenhouse gases? [2 marks]

12. Predict what might happen if microorganisms began releasing methane. How will this affect the production of greenhouse gases? [2 marks]

- 13. Give one natural source for each of the following greenhouse gases: [4 marks]
 - a. Carbon Dioxide
 - b. Methane
 - c. Nitrous Oxide
 - d. Water Vapour
- 14. Use a diagram and explain the rain-shadow effect. Explain why British Columbia and Alberta have very different climates even though they are at the same latitude. [3 marks]

15. Explain what is a positive feedback loop. Provide an example. [2 marks]

16. Explain what is a negative feedback loop. Provide an example. [2 marks]