**Jimma University**

**College of natural science**

**Department of Chemistry**

**Assignment for regular 3rd rear BSC chemistry students**

**Environmental Chemistry & Toxicology (Chem 3114) Group assignment**

**Academic year 2019/20 (2012 E.C)**

**Explain and make clear by the use of concrete examples or figure diagrams.**

1. What factors affect the fate of a chemical in the environment?
2. Compare and contrast abiotic transformation and degradation and biotic transformation and degradation
3. List some of the chemicals found in the Environment that can be transformed or degraded by Environmental factors
4. Describe how the availability of nutrients affects the productivity of ecosystems
5. Discuss how thermal stratification of a body of water may affect its chemistry.
6. Derive formula used to calculate fraction of CO2, CO32- and HCO3- in water.
7. Relate the oxygen sag curve and bacterial growth pattern on the same curve.
8. Discuss the some mechanisms of removal of particulate matter from gas streams which is most widely practiced means of air pollution control?
9. It is generally divide the atmosphere into 4 regions based on the dependence of temperature/density on altitude. What are those 4 regions? Explain their temperature and pressure profile as well. What are their main constituents at regions? Where is the main layer of ozone located? [+ Figure].
10. O3 is one component of the atmosphere. Describe all its reactions and the functions and effects in the atmosphere.
11. How does the extreme cold of stratospheric clouds in Antarctic regions contribute to the Antarctic ozone hole?
12. Describe the chapman cycle? And Write the reactions in the Chapman cycle.
13. What is the settling velocity of a particle having a Stokes diameter of 10 μm and a density of 1 g/cm3 in air at 1.00 atm pressure and 0°C temperature? (The viscosity of air at 0°C is 170.8 micro poise. The density of air under these conditions is 1.29 g/L.)
14. What is the rationale for classifying most acid rain as a secondary pollutant?
15. What effect upon soil acidity would result from heavy fertilization with ammonium nitrate accompanied by exposure of the soil to air and the action of aerobic bacteria?
16. What is the primary mechanism by which organic material in soil exchanges cations?
17. Compare and contrast Synergism, Potentiation and Antagonism
18. Explain Dose-Response relationships of pollutants?
19. Briefly discuss the 12 Principles of Green Chemistry