Question 25 (5 marks) Eutrophication.

[DO] [BO].

What is the relationship between dissolved oxygen and biochemical oxygen demand and why is it important to monitor both in natural ways? **5**

Dissolved oxygen is the amount of oxygen dissolved in 1L of solution and biochemical oxygen demand is the amount of oxygen required for metabolism of microbe over a period of 5 days at 20°C and in darkness. DO can be measured by a oxygen sensitive probe or Winkler method and indicate the amount of oxygen available for metabolism and photosynthesis of aquatic plant in waterways. A high DO is required for maximum functioning and a lack of DO can lead to death of aquatic organism, which will form organic matter which are decomposed to produce cyanobacteria, which release toxin, and degrading the quality of the water. BOD is measured by measuring DO and placing the sample incubated at 20°C and in darkness for five days and measuring DO. The BOD is proportional to initial DO - final DO. monitoring BOD in waterways is essential in conjunction with DO as a high BOD but small DO can lead to death of aquatic life. Monitoring BOD and DO also relates to measuring eutrophication level, as a low DO and high BOD will indicate excessive growth of algae produced by an algal bloom. monitoring eutrophication or by measuring BOD and DO can prevent an algal bloom occuring if treated early, thus maintaining quality of water.