Centre for Energy Studies

ENERGY, ECOLOGY ENVIRONMENT : ESL-710

Time : 1 hr. **(Minor – II 23.3.2007)** **MM : 20**

1. a) What are the different steps used for water treatment? Discuss each process with applieation? (5)

   b) What are the principal point sources for water pollution? What kind of pollution is generated from these sources? (6)

   c) What are toxins in water? What is the effeet of toxin on invertebrate population in water? (3)

2. a) 20 ml of a sewage was mixed with water to fill a 300 ml bottle. It had an initial DO of 9.0 mg/l. To assure accurate test, it was desired to have atleast 2.0 mg/l drop in DO during 5 day BOD and DO final as 2.0 mg/l. For what range of BOD_5 would this dilution produce the desired result. (3)

   b) The dilution factor P for an unseeded mixture of waste and water is 0.030. The DO of the mixture is 9.0 mg/l and after 5 days has dropped to 3.0 mg/l. The reaction rate constant k has been found to be 0.22 day^{-1} :

   i) What is the 5 day BOD of the waste?

   ii) What would be the ultimate carbonaceous BOD?

   iii) What would be the remaining oxygen demand after 5 days. (3)