NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
JANUARY/FEBRUARY 2013 EXAMINATION

ESM 444 – INDUSTRIAL WASTES AND INDUSTRIAL WATER TREATMENT

Answer any four questions **2 HOURS**

1. (a) Describe the main types of recirculation water system. (7½ marks)
   (b) List six advantages of closed recirculating water system (6 marks)
   (c) Explain briefly the industrial applications of closed recirculation water system (4 marks)

2. (a) Describe the two main types of boilers used in industrial applications (7½ marks)
   (b) Discuss problems associated with the use of boilers (12 marks)

3. (a) Identify the various sources and composition of industrial wastewaters. (7 marks)
   (b) Industrial Wastewaters are treated to obtain high quality water for specific purposes. List the different procedures used in industrial wastewater treatment. (5 marks)
   (c) Write a short note on biological treatment of industrial wastewaters. (6 marks)

4. (a) Identify some industries that generate waste and comment on the types of waste they generate (8 marks)
   (b) Identify and discuss briefly the Impact of Industrial Waste on the Environment (10marks)

5. (a) Discuss the integrated methods of waste disposal (10 marks)
   (b) List 5 methods of waste reduction (7½ marks)

6. (a) What is recycling in waste management? (7 marks)

(b) What is meant by ‘biological reprocessing’? (6 marks)
(c) List 5 advantages of recycling. (5 marks)