



NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
MARCH/APRIL 2016 EXAMINATION

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: ESM 444
COURSE TITLE: INDUSTRIAL WASTES AND INDUSTRIAL WATER TREATMENT

TIME: 2 HOURS
INSTRUCTION: ANSWER ANY FOUR QUESTIONS

1. (a) Identify the major problems associated with the use of boiler system. (4 mks)
(b) How can the problems identified in 1(a) be addressed? (10 mks)
(c) What do you think is the cause of these problems? (3 ½ mks)
2. (a) What is involved in waste management practice? (5mks)
(b) State the aim of waste management practice. (2mks)
(c) Discuss the methods of waste disposal. (10 ½ mks)
3. (a) Give at least two (2) definitions of Recycling. (2 mks)
(b) Enumerate the merits of Recycling. (7 mks)
(c) Write briefly on the applications of closed recirculation water system and how it can be controlled. (5 mks)
(d) Mention the main sources of industrial waste waters. (3½ mks)
4. (a) Describe how closed circulation system operates. (3 ½ mks)
(b) Briefly explain what causes increase in corrosion in a closed system and how it can be controlled. (7mks)
(c) Discuss the advantages of closed recirculating system. (7mks)
5. (a) Explain what the following involves:
(i) Removal of solids (2mks)
(ii) Removal of oil and grease (2mks)
(iii) Treatment of acids and alkalis (2mks)
(iv) Treatment of toxic materials (4 ½ mks)
(b) Mention at least ten (10) industrial wastes. (5mks)
(c) What effects does industrial waste have on the environment? Itemize. (2mks)

6. (a) How can wastes be reduced? (6 mks)
- (b) Write briefly on the method employed in the management of organic wastes.
(5 ½ mks)
- (c) What categories of wastes are recyclable? (6 mks)