



NATIONAL OPEN UNIVERSITY OF NIGERIA
UNIVERSITY VILLAGE, PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE
EXPRESS WAY, JABI - ABUJA.

FACULTY OF SCIENCES

DEPARTMENT OF PURE AND APPLIED SCIENCES

FEBRUARY/MARCH 2018 EXAMINATION

COURSE CODE: CHM 314

COURSE TITLE: ENVIRONMENTAL CHEMISTRY

TIME: 2 HOURS

INSTRUCTION: Question one is compulsory. Answer question one and any other three questions.

QUESTION ONE

- 1a) Discuss briefly on the carbon cycle. 7 marks
- 1b) Why are particulates air pollutants? Expatriate. 5 marks
- 1ci) Enumerate on municipal wastewater characteristics. 4½ marks
- 1cii) Differentiate between primary, secondary and tertiary wastewater treatment methods. 3 marks
- 1d) What is total dissolved solids. Mention any two significance of total dissolved solids. 4½ marks
- 1f) Mention any one wet method of analysis used for the determination of chloride in a sample 1 mark

QUESTION TWO

2a) Write short note on causes of Eutrophication, and its consequences. 9½ marks

2b) Explain composting. 5½ marks

QUESTION THREE

1ai) With accompanying chemical equations, discuss the phenomenon “acid rain”.
15 marks

QUESTION FOUR

Discuss briefly the sources and consequences/significance of acidity and temperature in a water body. 15 marks

QUESTION FIVE

5a) 10 ml of a river sample was transferred to a 300ml BOD bottle and diluted to 300 ml with organic free, oxygen saturated water. The initial dissolved oxygen was determined and found to be 9.1 mg/L. The BOD bottled was tightly stoppered and placed in the incubator at 20⁰ C for five days after which the dissolved oxygen was again determined and found to be 4.4 mg/L. Calculate the BOD of this wastewater. If the WHO permissible limit of BOD in a sample of river water is 5 mg/L, what information can be derived from the calculated BOD?
12 marks

5b) State three applications of BOD data. 3 marks