



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 SCIENCE
2024 1 EXAMINATION

COURSE CODE: CHM 314
CREDIT UNIT: 2
COURSE TITLE: ENVIRONMENTAL CHEMISTRY
TIME: 2 HOURS

INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

Question one

- a) With the aid of diagram, briefly explain the water cycle. **10mks**
- b) Using equations only, describe the action of microorganisms in water and soil on SO_4^{2-} in the presence of carbohydrate to liberate H_2S . **5mks**
- (b) Outline four important sources that contribute oil and grease to municipal wastewaters, **5mks**
- (c) Discuss the major application of EDTA titration, **4mks**
- (d) Temperature is an important parameter in evaluation of surface water system, show a justification for this statement and state how surface water receives its temperature, **6mks**

Question two

- a) Describe in detail the two main modes of chemical pollutants release into the environment. **10mks**
- b) Differentiate between contamination and pollution. **4mks**
- c) The monitoring of the presence and level of fluoride ion in water requires greater efforts than is given to chloride ion why? **6mks**

Question three

- a) Classify and explain each solid waste according to the sources from which they are generated. **12mks**
- b) Name the four most important properties of solid waste if it is to be used as fuel. **8mks**

Question four

- a) Name the methods used in the determination of Cl^- in water and write down the equation of the reaction. **12mks**
- b) Draw and label a carbon cycle, **8mks**

Question five

- a) Name 10 chemical parameters that is usually determined in water assessment. **10mks**
- b) Define water hardness and mention the ions causing hardness in water. **10mk**