

**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**

**NOVEMBER 2018, SECOND SEMESTER EXAMINATION**

**COURSE CODE: CHM 314**

**COURSE TITLE: ENVIRONMENTAL CHEMISTRY**

**COURSE UNIT: 2**

**TIME: 2 HOURS**

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

**QUESTION ONE**

1a. Discuss the sources and effects of NO and NO2 in the environment. (13 mks)

1b.With respect to their distance from the Earth’s surface and characteristics, distinguish between the

 troposphere and stratosphere. (8 mks)

1c. 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 BOD calculated.

 (4mks)

**QUESTION TWO**

1a.Differentiate between contamination and pollution. (3mks)

1b. Write short note on the following:

1. Sources of soil pollutants
2. Mechanism of soil pollution by (a) sorption of gases (b) Fluvial transport and deposition
3. Consequences of soil pollution

 (12 mks)

**QUESTION THREE**

3a) Enumerate the sources and effects of crude oil on the environment. (7 mks)

3b. Discuss the importance of waste water treatment prior to discharge into a receiving body of water. (8 mks)

**QUESTION FOUR**

4a. What is the carbon cycle? (1mk)

4b. Explain any three ways carbon dioxide can be released and removed from the atmosphere.(12 mks)

4c. State the types of conventional waste water treatment**.** (2 mks)

**QUESTION FIVE**

5a.Write briefly on effects of solid waste in the environment. (4 mks)

5b. Explain briefly the following solid waste disposal methods.

1. Composting
2. Incineration

 ( 8 mks)

5c. State six (6) constituents of municipal waste water. (3mks**)**