



**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**

**SEPTEMBER, 2020\_1 EXAMINATION**

**COURSE CODE: CHM 314**

**COURSE TITLE: ENVIRONMENTAL CHEMISTRY**

**CREDIT UNIT: 2**

**TIME: 2 HOURS**

**INSTRUCTION: Answer questions one and any other three questions.**

**QUESTION ONE**

1a. Using chemical equation explain how thermal decomposition of carbonate rocks or limestone leads to release of carbon (iv) oxide.

2 Marks)

1b. How will increased use of fertilizers results in ozone layer depletion?

(3 marks)

1c. Name the three major groups of airborne carcinogens.

1 ½ marks

1d. State the two important oxides of nitrogen that are emitted in significant quantities to the atmosphere.

1 mark

1ei. What is the primary source of hydroxyl (OH) radical in the atmosphere?

1 mark

1eii. Using chemical equations only show how the hydroxyl radical is formed from its primary source.

4 ½ mark

1eiii. Of what significance is the formation of hydroxyl radical in the atmosphere?

- 3 marks
- 1fi. What are asbestos? 1<sup>1</sup>/<sub>2</sub> marks
- 1fii. Discuss briefly the environmental consequence(s) of asbestos. 2<sup>1</sup>/<sub>2</sub> marks
- 1g. State four useful products that can be generated from wastes if effectively managed. 2marks
- 1h. List two methods for measuring water acidity. 1 mark
- 1i. State two significance of COD test of water. 2 marks

### QUESTION TWO

2a. Define each of the following terms:

- (1) Weather 1<sup>1</sup>/<sub>2</sub> marks
- (2) Climate 1<sup>1</sup>/<sub>2</sub> marks
- 2b. State the importance of ozone in the stratosphere 3 marks

2c. Explain briefly using chemical equation the significance of CFCs in ozone layer depletion.

- 7<sup>1</sup>/<sub>2</sub> marks
- 2d. State three major sources of soil pollution. 1<sup>1</sup>/<sub>2</sub> marks

### QUESTION THREE

- 3a. What are the criteria for classifying a pollutant as *priority pollutant*? 4 marks
- 3b. When is a water body said to be polluted? 3 marks
- 3c. Write short notes on the following pollutants of water:
- (i) Persistent organic chemicals 4 marks
- (ii) Heavy Metals 4 marks

### QUESTION FOUR

4a. Explain briefly why cigarette smoking is especially dangerous for those with heart disease.

4 marks

4b. State the positive and the negative effects of ozone. 3 marks

4c. Explain why soil pollution is of great concern to man. 3 marks

4d. Complete the following table:

	<b>Soil Pollutant</b>	<b>Sources (two )</b>
1	Heavy Metals	
2	Hydrocarbons	
3	Nutrient-Rich Wasted	
4	Radionuclides	
5	Pathogenic Organisms	

5 marks

### QUESTION FIVE

5a. Explain in a statement the term Primary Treatment of wastewater. 2 marks

5b. Describe briefly the following stages in Preliminary treatment of wastewater:

(i) Screening 2 marks

(ii) Sedimentation 2 marks

5ci. What are the conditions necessitating the reuse of waste water? 3 marks

5cii. State some purposes for which wastewater have been reused. 3 marks

5d. Explain briefly why  $^{137}\text{Cs}$  and  $^{90}\text{Sr}$  are considered serious pollutants in soils. 3 marks