



**National Open University of Nigeria**  
**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**  
**Faculty of Science**  
**2022\_1 EXAMINATION**

**COURSE CODE: EMT401**

**COURSE TITLE: ENVIRONMENTAL MONITORING SYSTEM AND TECHNIQUES**

**CREDIT: 2 Units**

**TIME ALLOWED: 2 Hours**

Instruction: Attempt question number ONE (1) and any other THREE (3) questions. Question number one (1) carries 25 marks, while the other questions carry (15) marks each.

**1a) Complete the table on Atmospheric gas composition (average).(15 marks)**

<b>Gas</b>	<b>Mole fractions</b>
<b>1</b>	0.78
Oxygen (O)	<b>2</b>
Water (HO)	<b>3</b>
<b>4</b>	0.0093
<b>5</b>	$370 \times 10^{-6}$ (date: 2000)
Neon (NE)	<b>6</b>
Ozone (O <sub>3</sub> )	<b>7</b>
<b>8</b>	$5.2 \times 10^{-6}$
Methane (CH <sub>4</sub> )	<b>9</b>
Krypton (Kr)	<b>10</b>
<b>11</b>	$0.55 \times 10^{-6}$
Nitrous Oxide (N <sub>2</sub> O)	<b>12</b>
<b>13</b>	$0.03 \times 10^{-6}$ to $0.3 \times 10^{-6}$
<b>14</b>	$3.0 \times 10^{-9}$
Carbonyl Sulfide (COS)	<b>15</b>

1b) Highlight the objectives of environmental monitoring (10marks)

2a) Discuss extensively off-site monitoring assessment (10marks)

2b) List the four broad predicted effect of climate change (5marks)

3a) Explain briefly how the following use environmental monitoring information outside the Government (10marks)

- i. Resource managers (2marks)
- ii. Health professionals (2marks)
- iii. Planners (2marks)
- iv. Emergency responders (2marks)
- v. Industries (2marks)

3b) Define the term Meteorology (5marks)

- 4a) Name the systems of the natural environment (4mark)
- 4b) Outline the purposes of environmental monitoring (4marks)
- 4c) List the steps according to Telfair and Mulvihill (2000) ensures the success of a monitoring program (7marks)
- 5a) State the assertion of Tolga (2003) on atmospheric dispersion model (5marks)
- 5b) Highlight the Characteristics of Gaussian-plume models (10marks)
- 6a) List the stages in the process of air pollution modelling (5marks)
- 6b) Enumerate on the uses of atmospheric dispersion modelling results (10marks).