



**National Open University of Nigeria**  
**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**  
**Faculty of Science**  
**2021\_2 EXAMINATIONS**

**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)**

Gas	Mole fractions
<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 (7marks)

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

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

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 (2marks)

4a) Name the systems of the natural environment (1mark)

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 (2marks)

5b) Highlight the Characteristics of Gaussian-plume models (10marks)

6a) List the stages in the process of air pollution modelling (2marks)

6b) Enumerate on the uses of atmospheric dispersion modelling results (10marks).