



**National Open University of Nigeria**  
**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**  
**Faculty of Science**  
**POP EXAMINATION 2022\_2**

**COURSE CODE: ESM343**

**COURSE TITLE: Climate Change and Environment**

**CREDIT: 2Units**

**TIME ALLOWED: 2 Hours**

**Instruction:** Attempt question number ONE (1) and any other TWO (2) questions. Question number one (1) carries 30marks, while the other questions carry (20) marks each.

1a). With the aid of a diagram illustrate the global modification of incoming solar radiation by atmospheric and surface processes. **(15 marks)**

1b). Describe the two specific kinds of albedo that scientists measure **(5marks)**

1c). Explain how physical and biological data contributed to the earth's climatic history **(5marks)**

1d). Discuss the role of the following in the atmosphere/Explain the role of Oxygen in the atmosphere. **(5marks)**

2). Write short notes on the following;

i. Precipitation**(2marks)**

ii. Humidity**(11marks)**

2b). Outline the basic factors that enhance the desirability of latrines**(7marks)**

3a) Describe Air temperature in relation to air in the atmosphere **(2marks)**

3b) Describe the instruments that are used to measure wind and how they operate **(6marks)**

3c) State the reflectivity of insolation percentage the following **(5marks)**

i. Dry sand

ii. Broadleaf deciduous forest

iii. Needle leaf coniferous forest

iv. Grass type vegetation

v. Fresh snow

3d). Explain the pit latrine system**(7marks)**

4a) Discuss the role of the following in the atmosphere;

i. Nitrogen**(4marks)**

ii. Carbon Dioxide(**6marks**)

4b) Explain the role of absorption processes in modifying the solar radiation (**5marks**)

4c). Explain how waste water becomes influent (**1mark**)

4d). Write out the equation for the chemical reaction of photosynthesis(**2marks**)

4e). Differentiate between primary and secondary treatment of waste water(**2marks**)

5a)Discuss the stratosphere (**15marks**)

5b). outline the features of the alternative system of secondary treatment (**5marks**)