



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA**  
**FACULTY OF SCIENCES**

**DEPARTMENT OF PURE AND APPLIED SCIENCE**

**2019\_1 SEMESTER EXAMINATION**

**COURSE CODE: PHY 457**  
**COURSE TITLE: ENVIRONMENTAL PHYSICS**  
**CREDIT UNIT 3**  
**TIME ALLOWED (2½ HRS)**

**INSTRUCTION:** *Answer question 1 and any other four questions*

**QUESTION 1**

- 1a** Define environmental physics **2 marks**
- b** Discuss the following and their effects on the environment
- i** Air pollution **3 marks**
- ii** Thermal Pollution **3 marks**
- iii** Fossil Fuel steam plant **3 marks**
- c** All synchronous satellites are put into orbit whose radius  $r = 4.23 \times 10^7 \text{m}$  the orbit is in the plane of the equator. The arc length  $s$  that separate two adjacent synchronous satellites is  $7.4 \times 10^5 \text{m}$ . Find the angular separation of the satellites in degrees. **6 marks**
- d** Explain the concepts of processing of remote sensing data **5 marks**

**QUESTION 2**

Discuss the following briefly as related with global weather and climatic patterns

- a.** weathering and landform **4 marks**
- b.** human activity and the environment **4 marks**
- c.** greenhouse effect **4 marks**

**QUESTION 3**

- 11.** Discuss the following energy resources
- a** Hydroelectric Power Plant **4 marks**
- b** Wind Power Plants **4 marks**
- c** Solar Energy **4 marks**

**QUESTION 4**

- a** Differentiate between the ozone layer depletion and global warming **4.5 marks**
- b** Discuss the different areas where environmental modeling can be applicable **3 marks**
- c** Discuss briefly the three software use in environmental modeling. **4.5marks**

**QUESTION 5**

- a** Explain the concept of the Two-Body problem in details **6 marks**
- b** Explain the concept of the many-body problem in details **6 marks**

**QUESTION 6**

- a** Explain energy cycle **6 marks**
- b** Describe the two mechanisms by which wind is produced **6 marks**