



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

**DEPARTMENT OF PURE AND APPLIED SCIENCE**

**2021\_1 EXAMINATIONS**

**COURSE CODE:** PHY 461  
**COURSE TITLE:** GEOPHYSICS III  
**CREDIT UNIT:** 3  
**TIME ALLOWED:** (2½ HRS)

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

**QUESTION 1**

(i) Describe five (5) types of geophysical method in tabular form (5 marks)

in terms of their:

(ii) main sources of the field (5 marks) (iii) depth of application (2 marks)

(iv) main application areas (5 marks) and (v) survey method. (5 marks)

**QUESTION 2**

(a) Briefly describe Basic Physics of Electromagnetic method (3 marks)

(b) List and discuss any three (3) factors that determine whether or not a particular conductor will be detectable with any Electromagnetic System (EM) system (9 marks)

**QUESTION 3**

(a) Discuss briefly the basic principle and measuring technique in Transient Electromagnetic Method (8 marks)

(b) Explain the term Very Low Frequency Radiation (4 marks)

**QUESTION 4**

(a) Draw a Variation in skin depth,  $d$ , with respect to frequency and resistivity. (4 marks)

(b) What is a phase angle? (4 marks)

(c) Show a Phase in sinusoidal waves (4 marks)

**QUESTION 5**

(a) Briefly describe the CSAMT data. (6 marks)

(b) List three (3) VLF instruments. (3 marks)

(c) Briefly discuss Coupling in VLF. (3 marks)

**QUESTION 6**

- (a) Discuss the basic principle of Natural and Controlled-Source Audio-magnetotelluric (8 marks)
- (b) Outline the factors which control the depth of penetration of EM Fields. (4 marks)