



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF PHYSICS
2025_2 EXAMINATIONS

COURSE CODE: PHY361
COURSE TITLE: GEOPHYSICS II
CREDIT UNIT: 2
TIME ALLOWED: (2 HRS)
INSTRUCTION: *Answer question 1 and any other two questions*

QUESTION 1

- ai. Briefly describe seismic methods [4 marks]
ii. The features that can be mapped using seismic reflection are associated with what? [4 marks]
bi. Which methods will be a suitable alternative to refraction methods to determine the depth, and shape of a sedimentary basin. [4 marks]
ii. Briefly discuss the process with which refraction survey can provide information on velocities and depth of the subsurface [8 marks]
ci. State the advantages of the use of explosives to generate seismic energy [4 marks]
ii. Explain how a geophone records ground movement [6 marks]

(Total: 30 marks)

QUESTION 2

- ai. State two (2) advantages of reflection over refraction method. [8 marks]
b Describe how the structure of subsurface formation is mapped through seismic reflection method. [12 marks]

(Total: 20 marks)

QUESTION 3

- a. Explain the use of a variety of explosive-based methods in generating seismic waves [6 marks]
b. Describe multi-channel seismographs [14 marks]

(Total: 20 marks)

QUESTION 4

- ai. Define intercept time [2 marks]
ii. Write the intercept time equation relating velocities and the refractor depth for a single refractor [2 marks]
iii. Explain the possible approach for obtaining intercept time [4 marks]
b. Discuss annotation of field records in refraction surveys [12 marks]

(Total: 20 marks)

QUESTION 5

- a. Highlight four features that seismic reflection that can be used to map [8 marks]
b. Highlight four (4) applications of refraction surveys. What is the need for stacking? [12 marks]

(Total: 20 marks)