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**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA**

**FACULTY OF SCIENCES**

**DEPARTMENT OF PURE AND APPLIED SCIENCE**

 **2018\_2 SEMESTER EXAMINATION**

**COURSE CODE: PHY 361**

**COURSE TITLE: GEOPHYSICS II**

**CREDIT UNIT: 2**

**TIME ALLOWED (2 HRS)**

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

**QUESTION 1**

A. i. What are seismic waves? (3 marks)

ii. Write short notes on the following in relation to seismic work:

a. Hammer (3 marks)

b. Explosives (3 marks)

c. Safety (3 marks)

d. Time Breaks (3 marks)

B) i. What is seismic reflection? (2 marks)

 ii. Write short notes on the following:

 a. Seismic velocity (2 marks)

 b. Hidden layers (2 marks)

 c. Blind zones (2 marks)

 d. Intermediate refractor (2 marks)

**QUESTION 2**

**2**a) State the Snell’s law (3 marks)

 b) With the aid of a simple diagram, explain and show the following

concept in seismic theory.

i. Reflection (3 marks)

ii. Refraction (3 marks)

iii. Head waves (3 marks)

c) Differentiate between a geophones and hydrophones. (3 marks)

**QUESTION 3**

**3**a) What are geometric distortion? (3 marks)

b) Explain briefly, the following types of waves:

i. Primary wave (3 marks)

ii. Shear wave (3 marks)

iii. Love wave (3 marks)

c) Describe geophones with the aid of a simple diagram. (3 marks)

**QUESTION 4**

a) What are explosives? (3 marks)

b) State uses of explosive in seismic wave (3 marks)

c) State three conditions before accepted to carry out explosive (4.5 marks)

d) State three problems associated with explosive (4.5 marks)

**QUESTION 5**

a) Given that Vp(Quartz)=5200m/s, Vp(water)=1500m/s, p-wave velocity in sand stone is

 80%, Quartz is 20% .Calculate Vp (5 marks)

b) Explain the following types of wave:

i) Rayleigh wave (2.5 marks)

ii) Body wave (2.5 marks)

c) Briefly explain the term acoustic impedance of rock (5 marks)