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: PHY361
COURSE TITLE: GEOPHYSICS II
CREDIT UNIT: 2
TIME ALLOWED: (2 HRS)

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

QUESTION 1

(a) Explain what is meant by seismic waves   3 marks

 (ii) Explain the following types of waves:

    (i) primary wave (ii) shear wave   (iii) love wave   3 marks

    (iii) State Snell's law with the aid of diagram   3 marks

(bi) Differentiate between seismic reflection method and seismic refraction

   method   3 marks

(ii) Explain why seismic waves are generally referred to as elastic waves   3 marks

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

   concepts in seismic theory e.g. reflection, refraction, and head waves   10 marks

QUESTION 2

(ai) Explain Seismic velocities   3 marks

 (ii) Differentiate between Rayleigh wave and Body wave   4 marks
(b) Write short notes on the following in relation to seismic work:
 i) Hammer (ii) Explosives (iii) Safety   (iv) Time Breaks   8 marks

QUESTION 3

(a) Describe geophones with the aid of a simple diagram   5 marks

(ii) With examples, differentiate between coherent noise and random noise   5 marks

(b) Differentiate between a geophones and hydrophones.   5 marks

QUESTION 4

(a) What do you understand by the term acoustic impedance of a rock?   3 marks

(ii) State the Dix formula and define all the parameters and variable.   5 marks

(iii) What is normal move-out? Derive a move-out equation for a horizontal reflector. 7 marks

QUESTION 5

(a) Explain with the aid of diagram the following:

   (i) Multiple reflection   (ii) Simple multiple

   (iii) Peg leg   (iv) Intraformational multiples   8 marks

(b) Explain these terminologies:

 (i) Reflection survey   (ii) Geometric distortion in relation to reflection survey.   4 marks

(c) Write short notes on the following in relation to reflection:

 (i) Array   (ii) Spread Length   3 marks