ELIZADE UNIVERSITY

ILARA-MOKIN

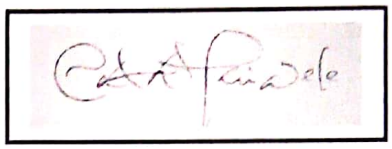
ONDO STATE

FACULTY: Basic and Applied Sciences
DEPARTMENT: Physical and Chemical Sciences
FIRST SEMESTER EXAMINATIONS
2018/2019 ACADEMIC SESSION

COURSE CODE: AGP 315

COURSE TITLE: SEISMIC PROSPECTING METHOD

DURATION: 2 Hours



HOD's SIGNATURE

TOTAL MARKS: 60 MARKS

Matriculation Number: _____

INSTRUCTIONS:

1. Write your matriculation number in the space provided above and also on the cover page of the exam booklet.
2. This question paper consists of 2 pages including this page.
3. **Attempt any four questions.**

1. (a) Derive the travel time equation for a wave originating from a source point O at the surface SS' and reflected by a horizontal plain RR'. Assuming the plane RR' is h meter below SS', overlain by a medium of constant velocity, V and source – receiver distance X with travel time, T.

(b) In (a) above, obtain the vertical reflection time, T_o

15 Marks

2. (a) Discuss three types of seismic waves

(b) Describe with labeled diagram four (4) types of spread geometry in seismic data acquisition

15 Marks

3. (a) Calculate the velocity of a compressional wave in a homogeneous rock layer with a density of 2.60 g/cm^3, a Young's modulus of 0.39 x 1011 N/m^2, and a Poisson's ratio of 0.11.

(b) Write short notes on the following: (i) Static Correction (ii) Migration

15 Marks

4. (a) Using Hooke's law, define the following elastic moduli (You may support your answers with appropriate diagrams), (i) Young's modulus (E); (ii) Shear modulus; (iii) Bulk modulus

(b) List two (2) advantages and disadvantages each of land and marine seismic sources.

15 Marks

5. (a) Outline the construction of a given type of geophone.

(b) Write on Seismic Data Processing

15 Marks

6. (a) The amplitude and shape of a seismic wavelet modifies as it travels through the subsurface. Explain with the aid of diagram the sources of its attenuation.

(b) What is your understanding of seismic noise?

15 Marks