



ELIZADE UNIVERSITY

ILARA-MOKIN

ONDO STATE

FACULTY: Basic and Applied Sciences
DEPARTMENT: Physical and Chemical Sciences
FIRST SEMESTER EXAMINATIONS
2019/2020 ACADEMIC SESSION

COURSE CODE: AGP 315

COURSE TITLE: SEISMIC PROSPECTING METHOD

DURATION: 2 1/2 Hours

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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) Define Hooke's law and use a suitable diagram to describe the elastic behavior of a solid body
(b) Derive the equation for T – X curve 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, and obtain the vertical reflection time, T_0

15 Marks

2. (a) Discuss on five (5) factors controlling seismic velocity in sedimentary rock
(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 layered rock with density of 2.60g/cm^3 , Young's modulus of $0.39 \times 10^{11} \text{ N/m}^2$, and Poisson's ratio of 0.11.

- (b) Write short notes on the following: (i) Normal Moveout (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 three (3) types of land and one (1) type of marine seismic wave source.

15 Marks

5. (a) Outline the construction of a given type of land seismic wave detector

- (b) Write on Seismic Data Processing

15 Marks

6. (a) Discuss three types of seismic waves

- (b) Define the Snell's law in terms of (i) seismic reflection (ii) Seismic Refraction Wave Paths. With the aid of diagram, differentiate between seismic reflection and seismic refraction

15 Marks