



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES

DEPARTMENT OF NATURAL AND APPLIED SCIENCES

QUALIFICATION: BACHELOR OF SCIENCE (MAJOR AND MINOR)	
QUALIFICATION CODE: 07BOSC	LEVEL: 7
COURSE CODE: GPH701S	COURSE NAME: GEOPHYSICS
SESSION: JULY 2022	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
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MODERATOR:	MR ROBERT MWANACHILENGA

INSTRUCTIONS
<ol style="list-style-type: none">1. Write all your answers in the answer booklet provided.2. Read the whole question before answering.3. Begin each question on a new page.

PERMISSIBLE MATERIALS

Scientific Calculator

THIS QUESTIONS PAPER CONSISTS OF 4 PAGES (Including this front page)

QUESTION 1 **[20]**

1.1 List four appropriate survey methods used for the exploration of metalliferous deposits. (4)

1.2 What materials are in the oceanic crust? (4)

1.3 State the three discontinuity that separated the earth layers. (6)

1.4 Briefly explain the following mechanical subdivisions of the earth.

1.4.1 Lithosphere (2)

1.4.2 Asthenosphere (2)

1.4.2 Mesosphere (2)

QUESTION 2 **[20]**

2.1 What are the differences between love wave and primary wave. (5)

2.2 Write down the equation for the travel time of a single horizontal refractor and define the various parameters. (5)

2.3 Explain the term Normal Moveout Δ_{td} (3)

2.4 A seismic reflection section shows a set of parallel reflectors at two-way times of 1.00, 2.00, 3.00 and 4.00. The time average velocities for these reflection times have estimated from stacking velocities at each end of the section to be 2.50, 3.00, 3.50 and 4.00km/s respectively. Find the depth to each reflector. (7)

QUESTION 3 [15]

3.1 Which instrument is used to detect a seismic wave? (2)

3.2 State the three main categories of seismic process. (6)

3.3 List 2 stages involved in data arrangement process. (2)

3.4 Briefly explain why the inner core has extreme temperature and pressure conditions. (5)

QUESTION 4 [15]

4.1 Outline two factors affecting density of rocks. (4)

4.2 Write down the equation for the Newton laws of gravitation and define the various Parameters. (5)

4.3 What are the assumptions for the Newton laws of gravitation? (3)

4.4 What do you understand by the term curie temperature (TC)? (3)

QUESTION 5

[15]

5.1 Define the intensity of induced magnetization (J_i) of a material.

(2)

5.2 List three causes of magnetic anomalies.

(3)

5.3 What is remanent magnetization?

(4)

5.4 Explain the following terms:

5.4.1 Chemical remanent magnetization (CRM).

(2)

5.4.2 Detrital remanent magnetization (DRM).

(2)

5.4.3 Thermoremanent magnetization (TRM).

(2)

QUESTION 6

[15]

6.1 Define electric resistivity.

(2)

6.2 Which characteristic of the ground determines its electrical resistivity?

(5)

6.3 Briefly explain the origin of telluric current.

(8)