



**ELIZADE UNIVERSITY, ILARA-MOKIN**  
**ONDO STATE**

**FACULTY: BASIC AND APPLIED SCIENCES**

**DEPARTMENT: PHYSICAL AND CHEMICAL SCIENCES**

**FIRST SEMESTER EXAMINATIONS**

**2015/2016 ACADEMIC SESSION**

**COURSE CODE: AGP 311**

**COURSE TITLE: GRAVITY & MAGNETIC PROSPECTING METHODS**

**DURATION: 2.5 HOURS**

**HOD's SIGNATURE**

**TOTAL MARKS: 60**

**INSTRUCTIONS: ANSWER TWO QUESTIONS EACH FROM SECTION A AND B**

**Section A: Answer Question 1 and any other question**

1. The following data were obtained during a day period gravity survey on a mineral prospect.

Given:

- Gravimeter Instrumental constant = 0.0948mGal
- Density = 2.76g/cm<sup>3</sup>
- Latitude of the study area = 7° 38'
- Station separation = 20m

- (a) Plot the Bouguer anomaly against distance.
- (b) Determine the approximate depth to source.

Station	B.S	0	1	2	3	4	5	6	B.S
Altitude (m)	225	232	231	230	230	232	231	236	225
Time	0:54	0:57	1:03	1:10	1:16	1:22	1:33	1:41	2:06
Instrument Reading	1256.0	1251.9	1251.7	1252.3	1252.5	1253.7	1254.0	1242.0	1255.3

- 2(a) Write a short note on land gravity survey prospecting method.
- (b) With the aid of diagram describe the sensitivity of unstable type gravimeter.
- 3(a) Explain in detail any three (3) of the correction needed to be applied to raw gravity data
- (b) List five factors that may have influence on measured gravity values.

**Section B: Answer any two questions**

- 4. (a) Imagine two masses of rock A and B with 0.02 and 0.5 magnetic susceptibility value respectively induced by an external field, H with magnitude 2010 nT. Calculate the intensity of Magnetization for (i) H perpendicular to the rocks surface. (ii) H at 30° to the rock surface (iii) Calculate the H' and total magnetic flux inside each rock.
- (b) Explain the concept of remanent magnetism using hysteresis loop.
- 5. (a) Show with the aid of a diagram the elements of earth's magnetic field.
- (b) With the aid of equation where necessary explain the following; (i) Magnetic moment (ii) Intensity of magnetization (iii) Susceptibility (iv) Magnetic induction.
- 6. (a) Discuss the field procedure involving a ground magnetometer, the data analysis / presentation and interpretation technique you will employ to map a particular mineral deposit
- (b) Describe the working principles of a Fluxgate Magnetometer.