



**FACULTY OF ENGINEERING AND ENVIRONMENT
DEPARTMENT OF GEOMATICS AND SURVEYING**

ELECTRICITY AND MAGNETISM

EGS 1210

Final Examination Paper

This examination paper consists of 2 pages

Time Allowed: 3 hours

Total Marks: 100

Examiner's Name: Mr. C. Musiiwa

INSTRUCTIONS

1. Answer **ALL** Questions

1. Define the following terms
 - a. Electric Charge [2]
 - b. Electric Field [2]
 - c. Magnetic Field [2]
 - d. Magnetic flux [2]
 - e. Magnetic flux density [2]
 - f. Electric Potential [2]

2. Describe with relevant illustrations any two other quantities that obey the physics definition of a “**field**.” [6]
3. Using relevant examples, differentiate between electricity and magnetism. [5]
4. With the aid of diagrams, elaborate on the difference between **fields** and **particles** in Electricity and Magnetism [10]
5. You are a manager at NRZ and they want to introduce new trains which make use of *Electromagnetic Levitation*. Explain in detail how these trains operate using theories of magnetism. [10]
6. Briefly explain the concept of Magnetic Resonance Imaging in the medical field. [10]
7. Compare and contrast the difference between Gravitational force of attraction and the Electromagnetic force. [10]
8. Elaborate on the origins of the Earth`s magnetic field and its significance to the existence of life on Earth. [10]
9. A new location has been introduced in Gwanda and an application letter for connection to the national electrical grid has been done. As the ZETDC projects manager, what is the type of transformer needed to connect the new houses from an existing **11 KV** powerline and elaborate on how the transformer works. [10]
10. As a survey professional it is very important to understand electricity and magnetism, why? [10]

END OF EXAMINATION