



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCES

DEPARTMENT OF ENVIRONMENTAL SCIENCE

**BACHELOR OF SCIENCE HONOURS DEGREE IN ENVIRONMENTAL SCIENCE AND
HEALTH**

ENERGY RESOURCES PLANNING AND CONSERVATION

ESH 1206

Final Examination Paper

September 2024

This examination paper consists of 3 pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements: None

Examiner's Name: Mr P.L Moyo

INSTRUCTIONS

1. Answer **QUESTION 1** and any **THREE** questions
2. Each question carries 25 marks

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	25
3.	25
4.	25
5.	25
6.	25
TOTAL	100

QUESTION 1 (Compulsory)

A Non-Governmental Organization (NGO) has proposed a plan to transition the rural community to a sustainable energy system based on renewable sources. The targeted areas for this initiative are within a 20 km radius of the rural community town centre. The initial focus will be on introducing renewable energy solutions for local businesses and community institutions, followed by a second phase targeting household-level adoption. The NGO has secured funding for the initial capital investments, but the long-term viability of the project will depend on the ability of the local community to manage and maintain the renewable energy infrastructure. As a Senior Energy and Sustainability Specialist, you have been tasked with developing a comprehensive plan to guide the implementation and success of this renewable energy transition in rural Riverdale.

- a) Outline the objectives of your renewable energy transition plan for the rural community [5].
- b) Describe the types of data and information you would need to collect and analyse to inform the development of your plan. Explain the importance of each data category for the planning process [12].
- c) Propose a framework for monitoring and evaluating the performance and impact of the renewable energy transition plan over time [8].

QUESTION 2

- (a) Differentiate between equality and equity as it relates to energy resources allocation [5].
- (b) Using specific examples, explain how implementation of energy policies aides equality and equity in energy allocation [10].
- (c) What are the challenges that have deterred Zimbabwe from fully embracing renewable energy technologies [10]?

QUESTION 3

Planning is key in ensuring efficient energy utilisation.

- (a) Using examples, define energy Planning [5].
- (b) State and explain four (4) key elements involved in energy planning [12].
- (c) Explain why managers resist planning [8].

QUESTION 4

Citing relevant examples, discuss the energy conservation strategies that have been used in Zimbabwe.

QUESTION 5

- a) Usage of radioactive material as a source of energy is gaining popularity in different countries. Citing specific examples discuss the implications of utilisation of this energy source in a low-income country such as Zimbabwe [15].
- b) Describe and explain the problems associated with energy cost reduction programmes [10].

QUESTION 6

High energy costs have impacted negatively on Sustainable Development in developing countries. Giving context specific examples describe how these negative impacts have been brought about.