



DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

UNIVERSITY EXAMINATIONS 2021/2022

**YEAR ONE SEMESTER TWO EXAMINATIONS FOR THE DEGREE OF MASTER OF
SCIENCE IN CHEMISTRY**

SCH 6112: ENERGY MANAGEMENT IN LEATHER INDUSTRIES

DATE: 3RD FEBRUARY 2022

TIME: 10.00-01.00 P.M

INSTRUCTION: Answer ALL questions

QUESTION ONE [15 MARKS]

- a) Define the following terms: **[2 Marks]**
i) Housekeeping
ii) Energy audit
- b) Give any four examples of energy resources. **[2 Marks]**
- c) State and explain the three areas where the industry management can demonstrate to show, enhance and motivate the employees on energy management. **[6 Marks]**
- d) Give and explain the five main reasons for the need to implement good housekeeping. **[5 Marks]**

QUESTION TWO: [15 MARKS]

- a) You are the production manager of Nakuru Tanners and the company owner has asked you to talk to your junior employees the need for energy optimization in tannery operations. What will be your talking points? **[3 Marks]**
- b) Give the four main sources of energy in a tannery and indicate what they are used for. **[2 Marks]**
- c) Why does a leather company need to conduct energy audit? **[6 Marks]**
- d) As a scientist, why is there quest for more alternatives for renewable energy sources? **[4 Marks]**

QUESTION THREE: [15 MARKS]

- a) Differentiate between renewable and non-renewable energy resources and give two examples of each. **[2 Marks]**
- b) Briefly explain how biomass is produced as an alternative source of energy. **[4 Marks]**
- c) State the six operations in leather industry that must use electricity. **[3 Marks]**
- d) There are three main processes in leather industry that are high energy unit operations in tannery, footwear and leather product units. State them and give brief explanation. **[6 Marks]**

QUESTION FOUR: [15 MARKS]

- a) From the energy perspective, give any four reasons why a detailed energy audit is usually conducted. **[4 Marks]**
- b) Putting the concept of good housekeeping into practice means undertaking voluntary action aimed at what areas of an industrial operation? **[5 Marks]**
- c) As a graduate student, Sagana Tanneries has invited you to give a talk to her employees on process improvement for energy conservation. Highlight the areas you will cover and give brief explanation. **[6 Marks]**