



**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR**

**FOURTH YEAR SECOND SEMESTER EXAMINATIONS  
FOR THE DEGREE  
OF**

**BACHELOR OF SCIENCE IN DISASTER MITIGATION AND  
SUSTAINABLE DEVELOPMENT**

**COURSE CODE: DSM 404**

**COURSE TITLE: ENERGY FOR SUSTAINABLE  
DEVELOPMENT**

**DATE: 26/04/2022**

**TIME: 12 – 2PM**

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**INSTRUCTIONS TO CANDIDATES**

Answer question **ONE (1)** and any other **TWO** questions

**TIME: 2 HOURS**

MMUST observes **ZERO** tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

### **Question ONE**

(a) (i) Explain the term “biofuels” and state the main types. **(6 Marks)**

(ii) Explain the challenges of relying on biofuels as the priority renewable energy resources. **(14 marks)**

(b) Explain the process of formation of fossil fuels. **(10 Marks)**

### **Question TWO**

(a) Explain the generation of Photovoltaic Solar Power. **(10 Marks)**

(b) Outline the pros and cons of using PV cells in production of electricity. **(10 Marks)**

### **Question THREE**

(a) Explain the main forms of energy losses during the distribution of mains electricity power.

**(6 Marks)**

(b) Give ways in which the losses in (a) above can be minimized. **(6 Marks)**

(c) Explain the basic mode of operation of geothermal heat pumps that are used in heat

conditioning between the earth’s surface and households. **(8 Marks)**

### **Question FOUR**

(a) You are required to conduct an energy audit for a large supermarket in Kakamega town. Give

an outline of an audit checklist for the exercise. **(10 Marks)**

(b) Explain the main steps in undertaking the audit in (a) above. **(10 Marks)**