



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

**UNIVERSITY EXAMINATION FOR THE DEGREE IN SCIENCE IN RENEWABLE
ENERGY TECHNOLOGY AND MANAGEMENT**

1ST YEAR 2ND SEMESTER 2023/2024 ACADEMIC YEAR

CENTRE: MAIN CAMPUS

COURSE CODE: TEB 1104

COURSE TITLE: ENERGY AND ENVIRONMENT

EXAM VENUE:

STREAM: BSc. REN ENGY TEC & MGT

DATE: /04/2024

EXAM SESSION:

DURATION: 2 HOURS

Instructions

- 1. Answer question 1 (Compulsory) and ANY other two questions**
- 2. Candidates are advised not to write on question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

QUESTION ONE (30 Marks)

- a. Discuss what you understand by climate change, hence briefly explain effects of; Global warming, Acid rain and Ozone layer to our environment. **(8 Marks)**
- b. Briefly explain “Peak oil and Hubbert peak theory” in relation to fossil fuel supply and the future prospects of utilization of renewable energy. **(4 Marks)**
- c. “All energy sources are not totally risk free but vary in the level risks”. Explain this in reference to;
 - i. Bio fuels **(3 Marks)**
 - ii. Solar energy **(3 Marks)**
 - iii. Nuclear energy **(4 Marks)**
- d. Explain what you understand by”human induced greenhouse effect”, hence describe the production of the greenhouse gases present in the atmosphere. **(8 Marks)**

QUESTION TWO (20 Marks)

- a. Describe the following terms as used in “Occupational Safety and Health Management Systems”;
 - i. Occupational health **(4 Marks)**
 - ii. Workplace hazards **(4 Marks)**
- b. Briefly explain the following processes/discipline;
 - i. Hazard Assessment **(4 Marks)**
 - ii. Risk assessment **(4 Marks)**
 - iii. Occupational health psychology **(4 Marks)**

QUESTION THREE (20 Marks)

- a. It is believed that human activities have greatest influence on climate change. Outline these activities and describe how they trigger climate change. **(10 Marks)**
- b. Environmental impact of the energy industry is a major concern in most countries. Describe the possible measures that can be undertaken by a community to mitigation the impacts. **(10 Marks)**

QUESTION FOUR (20 Marks)

- a. The society needs energy to effectively perform its functions and therefore must address the impacts of energy use on the environment. Describe some of the actions that can be undertaken by the society to mitigate the impacts. **(8 Marks)**
- b. The Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations to assess and present current scientific knowledge about climate change and its impacts. In reference to the panel’s efforts so far, briefly describe the scientific evidence to climate change and the projected impacts. **(12 Marks)**

QUESTION FIVE (20 Marks)

- a. Briefly discuss what you understand by “Energy Storage” and outline its importance in an environment of energy scarcity. **(4 Marks)**
- b. Briefly explain the possible techniques/methods of energy storage with regard to the following forms of energy.
- i. Mechanical energy **(5 Marks)**
 - ii. Chemical energy **(5 Marks)**
 - iii. Biological storage **(3 Marks)**
 - iv. Magnetic storage **(3 Marks)**