



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

**UNIVERSITY EXAMINATIONS FOR THE DEGREE IN RENEWABLE ENERGY,
TECHNOLOGY AND MANAGENT**

4THYEAR 1STSEMESTER 2018/2019 ACADEMIC YEAR

CENTRE: MAIN CAMPUS

COURSE CODE: TET 3413

COURSE TITLE: ENERGY CONSERVATION AND MANAGEMENT

EXAM VENUE:

STREAM: BSc REN ENERGY TECH. &MGT.

DATE: ../12/2018

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) Briefly explain the following terms **(6marks)**
- i. Energy management
 - ii. Energy conservation
 - iii. Energy use efficiency
- b) What is a building/industrial energy audit?**(2 marks)**
- c) There are several benefits as a result of instituting Energy Management (EM) programs. Outline any two (2)**(2 marks)**
- d) Briefly outline the requirements of a well-planned, organized, and executed EM program **(4 marks)**
- e) Discuss three (3) recommended energy conservation measures to improve the thermal performance of a building envelope **(6 marks)**
- f) Briefly explain the concept of waste heat management **(6 marks)**
- g) Cogeneration is the sequential production of thermal and electric energy from a single fuel source. In this regard state the basic components of any cogeneration plant **(2 marks)**
- h) With regard to waste heat recovery, briefly explain what is ‘waste heat’ **(2 marks)**

QUESTION TWO**(20 marks)**

- a) Briefly outline five objectives of energy management **(5 marks)**
- b) Discuss five (5) measures that can be considered to improve the energy performance of both primary and secondary HVAC systems **(10 marks)**
- c) CHP schemes enable electricity to be generated locally, and eliminate much of the wastage of heat which normally occurs in conventional power plants. In this regard, discuss three (3) advantages of CHP **(5 marks)**

QUESTION THREE**(20 marks)**

- a) With regards to the roles of an energy manager, outline at least six (6) activities an energy manager typically does **(6 marks)**
- b) Energy Audit reports should be designed to encourage implementation. In this regard, discuss six (6) ways of enhancing the quality of energy audit reports**(12 marks)**
- c) nt system **(2 marks)**

QUESTION FOUR**(20 marks)**

- a) Discuss four (4) energy conservation measures that are suitable for compressed-air systems **(8 marks)**

- b) Energy audits occupy the first step in the pursuit of energy efficiency and management in both domestic and industrial facilities. In this regard, discuss four (4) types of energy audits that can be carried out **(12 marks)**

QUESTION FIVE**(20 marks)**

- a) Discuss the seven (7) Steps for Managing Energy Costs that are essential in order to manage energy costs **(14 marks)**

- b) Explain three (3) applications of waste heat recovery **(6 marks)**