



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

UNIVERSITY EXAMINATION FOR: HIGHER DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING

ERE 3230: RENEWABLE ENERGY

END OF SEMESTER EXAMINATION

SERIES: MAY 2016

TIME: 2 HOURS

DATE:

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of FIVE questions. Attempt any **THREE Questions**

Do not write on the question paper.

QUESTION ONE

- Define the term energy conservation. (2 marks)
- What are the three main aspects that make an energy source sustainable. (3 marks)
- Discuss the energy efficiency, and why increasing efficiency does not lower the amount of total energy consumed. (7 marks)
- Discuss the factors that currently prevent renewable energy sources such as wind from contributing a greater percentage of primary energy consumption. (8 marks)

QUESTION TWO

- (i) Discuss advantages and disadvantages of hydro electric generation. Consider both large and small installations. On what parameters does the power output depend? (7Marks)
- (ii) Solar energy is a renewable energy source used to generate electricity.
- (a) Explain the meaning of renewable energy.
- (b) Name two other renewable energy sources used to generate electricity. (4 Marks)
- (iii) State four differences between renewable and non renewable energy sources. (4 marks)
- (iv) Discuss the energy conservation in the domestic sector. (6 marks)

QUESTION THREE

- (a) i) Define the term environmental impact assessment. (2 marks)
ii) Describe the process of Environmental impact assessment. (10 marks)
- (b) Electricity may be generated using nuclear fuels. Apart from the cost of the electricity, what are the advantages and disadvantages of doing this? (6 Marks)
- (c) State two advantages of wind generated electricity. (2 marks)

QUESTION FOUR

- (i) State four advantages of hydropower. (4 marks)
- (ii) State four effects of sedimentation in hydropower stations. (4 marks)
- (iii) Discuss the environmental benefits of hydropower projects in Kenya. (8 marks)
- (iv) Outline the four steps in the management of energy consumption. (4 marks)

QUESTION FIVE

- (i) Outline environmental problems facing wind power generation. (2 marks)
- (ii) State two draw backs to the use of wind energy. (2 marks)

- (iii) What are the major thrust areas in the field of environmental conservation and management for developing hydropower. (8 marks)
- (iv) Discuss the benefits of energy conservation in the industrial sector. (6 marks)
- (v) Explain why hydropower is called a renewable source of energy. (2 marks)