



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ENGINEERING TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2021/2022 ACADEMIC YEAR

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR, DIPLOMA IN
ELECTRICAL AND ELECTRONIC ENGINEERING**

EEE 073: RENEWABLE ENRGY

DURATION:2 HOURS

Instructions to candidates:

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

1. a) State five benefits of renewable energy. (5 marks)
- b) Using a well labelled diagram describe how a solar cell work. (5 marks)
- c) Explain any three ways of funding Renewable energy systems. (6 marks)
- d) Explain three method of converting biomass to bio power. (6 marks)
- e) Discuss four ways in which Government of Kenya is a major supporter of renewable energy. (8 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

2. a) Define the following terms;
 - i) Digestion
 - ii) Digester
 - iii) Micro-grid (6 marks)
- b) State and explain any three advantages of anaerobic digestion. (6marks)
- c) Explain using block diagram, the operation of stand alone solar P.V system. (8 marks)

QUESTION THREE (20 MARKS)

3. a) State any four factors to consider before installing solar panel. (4 marks)
- b) Explain any three factors to consider when selecting Hydro-electric generator. (6 marks)
- c) Explain the function of the following component as applied to Hydro-electrical power generation.
 - i) value
 - ii) intake
 - iii) Reservoir (6 marks)
- d) The height of the dam is 2000feet, the amount of water flowing in the intake is 500 cubic feet per second and the worker efficient of the other component is at 80%. Calculate Generated Power in Kilowatts. (4 marks)

QUESTION FOUR (20 MARKS)

4. a) State any four advantages of using Geothermal Power Production. (4 marks)
- b) With the aid of labelled diagram, explain the construction of binary cycle geothermal electrical system. (8 marks)
- c) Describe the following terms in relation to micro-grind.
 - i) Challenges
 - ii) Impact (4 marks)
- d) Explain any two types of the Bio-mass power material. (4 marks)