



ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE
FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

SEMESTER I EXAMINATION, 2016/2017 ACADEMIC SESSION

COURSE TITLE: RENEWABLE ENERGY

COURSE CODE: EEE 425

EXAMINATION DATE: 27TH MARCH, 2017

COURSE LECTURER: DR. O. M. Longe

A rectangular box containing a handwritten signature in black ink.

HOD's SIGNATURE

TIME ALLOWED: 2 HRS

INSTRUCTIONS

1. ATTEMPT ANY **FOUR** QUESTIONS ONLY.
2. ALL QUESTIONS CARRY EQUAL MARK.
3. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
4. YOU ARE **NOT** ALLOWED TO BORROW CALCULATORS AND ANY OTHER WRITING MATERIALS DURING THE EXAMINATION.

QUESTION ONE

- a. What is renewable energy? [2 mks]
- b. Mention two renewable and non-renewable energy sources. [4 mks]
- c. Tabulate common greenhouse gases and give their global warming effects. [6 mks]
- d. Mention one organisation responsible for regulating and monitoring the Nigerian electricity industry. [1 mk]
- e. Name the two modes that renewable energy microgrid can be designed to operate. [2 mks]

QUESTION TWO

- a. Give three differences between solar thermal energy and solar photovoltaics. [6 mks]
- b. Explain three environmental impacts of solar energy. [6 mks]
- c. Give three examples of concentrators used in Consecrated Solar Panels (CSPs). [3 mks]

QUESTION THREE

- a. State the difference between off-shore and on-shore wind farms. [4 mks]
- b. With the aid of diagram explain the operation of a wind turbine. [9 mks]
- c. Mention the two types of wind turbine. [2 mks]

QUESTION FOUR

- a. Mention any two method by which biomass can be converted to energy. [2 mks]
- b. Explain three environmental impacts of biomass energy. [9 mks]
- c. Mention four advantages of biomass energy. [4 mks]

QUESTION FIVE

- a. Briefly explain hydroelectric power generation. [5 mks]
- b. Explain three environmental impacts of hydroelectric power. [9 mks]
- c. Mention a hydropower station in Nigeria. [1 mk]
- d. Mention open-source software that can be used to model hybrid renewable sources. [1 mk]

QUESTION SIX

- a. Define geothermal energy. [2 mks]
- b. Explain three environmental impacts of geothermal energy. [9 mks]
- c. Use a diagram to illustrate the basics of solar energy. [4 mks]