AJAYI CROWTHER UNIVERSITY, OYO

FACULTY OF NATURAL SCIENCES
DEPARTMENT OF PHYSICS

COURSE CODE: PHY 3111 **SEMESTER: FIRST**
SESSION: 2021/2022

COURSE TITLE: Fundamentals of Energy Processes And Environment

INSTRUCTION: Answer Any Three Questions **DURATION: $2\frac{1}{2}$ hrs**

1. (a) Describe each of the following terms: energy, power and environment.

   (b) Explain the following: high-quality energy and low- quality energy and give one example of each.

   (c) List two examples of the following: convention energy source, and non-conventional energy source.

   (d) State Joule's law of electrical heating.

   (e) Explain what is meant by electromagnetic induction. State Faraday's law of electromagnetic induction.

2. (a) Explain briefly what is meant by solar energy and list four uses of solar energy.

   (b) With the aid of a schematic diagram explain the mechanism of natural greenhouse effect.

   (c) (i) Define the terms global warming and list three human activities that could lead to global warming. (ii)Mention three harmful effects of global warming on man and his environment.

   (d) Mention three possible ways out of global warming.

   (e) State the role of Ozon layer in the upper atmosphere? List four effects of Ozone depletion.

3. (a) Explain what is by renewable and non-renewable energy resources.

   (b) Mention three examples each of renewable energy and non-renewable energy resources.

   (c) List three advantages and two environmental problems of hydroelectric power generation.

   (d) Explain what is meant by energy productivity and list three ways one can conserve (domestic) energy.

4. (a) List and write short notes on the four major components of a photovoltaic (PV) system that can be operated to generate electricity.

(b) List three applications of PV system in a rural area and state one factor that affects the output power from a PV module.

(c) Define the following terms: biomass, biogas and give one example of each.

(d) Describe briefly two methods of converting biomass into energy.

5. (a) List three conclusions of scientist and energy experts on how to achieve sustainable energy system.

(b) Transition to more sustainable energy depends primarily on "politics", explain this assertion.

(c) Explain the term thermal pollution and state its effect on the aquatic life and community around a thermal station.