

BINDURA UNIVERSITY OF SCIENCE EDUCATION
ENGINEERING AND PHYSICS DEPARTMENT
HPH429 ENERGY FOR SUSTAINABLE DEVELOPMENT
DURATION: THREE HOURS

JUN 2023

Answer **ANY FOUR** questions. Each question carries 25 marks.

1. The challenges for sustainable development are both heterogeneous and complex as the diversity of human societies and natural ecosystems worldwide. Describe indicative problems that are observed locally and globally. [25]
2. Access to affordable, reliable and sustainable energy is crucial to achieving many of the Sustainable Development Goals—from poverty eradication through advancements in health, education, water supply and industrialization to mitigating climate change. [25]

Explain advances in Zimbabwe to ensure availability of modern energy for all Zimbabweans.
3. Various energy issues always make headlines in media. Discuss local and global issues emanating from energy demand and supply that have made headlines in media. [25]
4. Major land-use changes due to fuel cycles such as coal, biomass, and hydropower, have implications for the natural as well as human environment. Give detailed explanation of household energy implications on the environment [25]
5. Adequate global energy supplies, for the world as a whole as well as for individual countries, are essential for sustainable development, proper functioning of the economy, and human well-being. Thus, the continuous availability of energy—in the quantities and forms required by the economy and society—must be ensured and secured.
 - a. What is energy security? [4]
 - b. Discuss the effects of interruptions of energy supply. [15]
 - c. Describe how energy security can be achieved [6]
6. Despite rising energy taxes, demand-side interventions, and supply shortages in many countries, world consumption of commercial energy continues to rise. The increase averages 1.5 percent a year. Explain the economic perspective on the questions posed by the prospective increases in energy consumption. [25]

END OF EXAM