



STRATHMORE UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES

MASTER OF SUSTAINABLE ENERGY TRANSITION

MSSET 8504: ENERGY ECONOMICS

DATE: 3rd MAY 2023

TIME: 2 HOURS

INSTRUCTION

1. This paper contains FOUR questions. Attempt any THREE questions
2. All workings should be shown clearly.

QUESTION ONE [20 MARKS]

- a) Highlight any SIX reasons why the energy market requires special attention as compared to other markets. [6 marks]
- b) Differentiate between the following terms as used in Energy Economics
 - i) Commercial and Non-commercial Energies
 - ii) Sunk Costs and External Costs
 - iii) Working capital and transfer payments[9 marks]
- c) Explain the reasons why in an electricity auction, system marginal price (SMP) is sometimes used as opposed to individual bids and offers. [5 marks]

QUESTION TWO [20 MARKS]

- a) Highlight the main differences between a regulated and a deregulated electricity market [4 marks]
- b) Discuss the econometric approach used in energy demand forecasting. What are the merits and demerits of this approach [8 marks]
- c)
- i) What are the disadvantages of relying on simple payback method in large energy projects
 - ii) Discuss the discounted payback method as an alternative to simple payback method as used in financial appraisal of energy projects. [8 marks]

QUESTION THREE [20 MARKS]

- a) Risk and uncertainty analysis is critical in most energy investments. Discuss some of the risk factors that can affect both the cost and the benefit stream in energy investments [6 marks]
- b)
- i) What is energy demand side management (DSM) and how is does it relate to energy economics?
 - ii) What are the justifications of DSM [6 marks]
- c) Explain the following energy trading mechanisms
- i) Over the counter (OTC) trading
 - ii) Electricity pools and Auctions [8 marks]

QUESTION FOUR [20 MARKS]

- a) Discuss the roles played by the following participants in an electricity market.
- i) Retailer
 - ii) Regulator
 - iii) The Market Operator (MO)
 - iv) The independent system operator (ISO) [8 marks]
- b) Discuss the retail competition electricity market model and give reasons why it is the most satisfactory approach. [8 marks]
- c) State and explain THREE main sources of energy projects financing [6 marks]