



KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

FOURTH YEAR FIRST SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF BSC (RENEWABLE ENERGY AND BIOFUEL
SYSTEMS)

COURSE CODE: *IET 421*

COURSE TITLE: *NETWORKING ENGINEERING, MODELLING AND
MANAGEMENT*

DURATION: 2 HOURS

DATE: 14/1/2022

TIME: 8-10AM

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
- Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of 4 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

(13)

QUESTION ONE

- a) Explain how renewable energy projects can be connected to electricity distribution grids and state its benefits to the country. (5mks)
- b) Explain the meaning of load matching and load factor. (5mks)
- c) State the economic factors that affect the design and distribution of electricity. (5mks)
- d) Briefly explain the non-conventional sources of energy (4mks)
- e) Explain the shortcomings and limitations to the existing sources energy. (5mks)
- f) What are the components you may need in balance off system. (5mks)

QUESTION TWO

- a) Explain the following terms as applied to electrical distribution systems. (5mks)
 - i) Circuit breakers and disconnectors
 - ii) Fuses
 - iii) Conductors
 - iv) Line insulators
 - v) Transformers
- b) What are the advantages of distributed energy resources. (5mks)
- c) Explain why electric power is transmitted in high voltages and state the advantages and limitations of high voltage transmission. (10mks)

QUESTION THREE

- a) Explain any five major benefits of upgrading and maintaining power distribution equipments. (5mks)
- b) State and explain the legal requirements that power providers considers before integrating home renewable energy sources to electric grid. (8mks).
- c) State the regulatory factors that impact on the operation of electricity transmission and distribution networks. (7Mks)

QUESTION FOUR

- A) Briefly explain how distributed generations energy works and how does it benefit the local and national energy supply. (8MKS)
- B) What are the general regulations in the generations, transmission, distribution and supply of electricity to industries (6MKS)
- C) Explain the importance of balance off system in electric power distribution. (6mks)

QUESTION FIVE

- A) State the economic factors which affect the energy transmission and distribution networks. (5mks)
- B) what is meant by an electric grid (3mks)
- C) What determines the choice of conductors in transmission networks? (4mks)
- D) Specify any two protective devices in electrical transmission system. (4mks)
- E) List and explain any three components of electrical power transmission. (4mks)