KIBABII UNIVERSITY

2017/2018 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER

SPECIAL/SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN RENEWABLE ENERGY AND BIOFUELS TECHNOLOGY

COURSE CODE: IET282

COURSE TITLE: Energy Management

DATE: 16/10/2018 TIME: 3-5pm

INSTRUCTIONS TO CANDIDATES

Answer question ONE and any other two questions

This paper consists of 2 printed pages. Please Turn over

Question One

(a) Differentiate between Energy Conservation and Energy Efficiency **[4 Marks]**
(b) Explain brieflyhow a nation benefits from Energy Efficiency programs **[3 marks]**
(c) Explain the basis for aim of Energy Security for any country**[2 Marks]**
(d) List any **Six** strategies for energy security of a country **[6 Marks]**
(e) Explain how each of the following would benefit from energy efficiency programs?
(i) Individual (ii) Industry, (iii) nation and (iii)world **[15 Marks]**

Question Two

Define energy policy

Explain the importance of an energy policy **[20 Marks]**

Question Three

(a) Define energy audit **[2 Marks]**
(b) Name the classes of energy conservation measures **[3 Marks]**
(c) Define 'energy management'. **[2 Marks]**
(d) State the FIVE principles of energy management **[10 Marks]**
(e) Explain how matching energy usage to requirement can enhance energy efficiency **[3 marks]**

Question Four

(a) Define:
(i) Reactive power (ii) Active power (iii) power factor, (iv) Load factor **[8 Marks]**

(ii) Explain how power factor is evaluated in the electrical system **[2 Marks]**

(iii) Draw the vector diagram showing the relation between kW, kVA &kVAr and angle θ between kW and kVA. **[5 Marks]**

(b) List any four important factors involved in deciding final cost of purchased electricity **[5 Marks]**

Question Five

Outline the Seven steps of energy management **[20 Marks]**