



**KIBABII UNIVERSITY**

**2016/2017 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER**

**Supplementary/Special EXAMINATIONS**

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

**COURSE CODE: IET 282**

**COURSE TITLE: Energy Management**

**DATE: 26<sup>TH</sup> SEPTEMBER 2017 TIME: 3 – 5 Pm**

**INSTRUCTIONS TO CANDIDATES**

Answer question ONE and any other two questions

This paper consists of 2 printed pages. Please Turn over



### Question One

- (a) Explain any Five reasons why a written energy policy will benefit the organization  
[15 Marks]
- (b) State Five elements of an effective energy policy [ 5 Marks]
- (c) Energy policies articulate corporate goals, objectives and targets. Give three typical examples of goals, objectives and targets in an energy policy. [ 10 Marks]

### Question Two

- (a) Define energy audit [3 Marks]
- (b) State the base line data that an audit team should collect while conducting detailed energy audit  
[10 Marks]
- (c) Explain important technical feasibility parameters that one should consider during analysis of energy conservation opportunities [7 Marks]

### Question Three

- (a) Describe the merits of using steam in industries. [ 10 Marks]

Briefly explain benefits that arise from an effective Monitoring & Targeting system [10 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  $\theta$  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]**