



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF ENGINEERING AND TECHNOLOGY**  
**UNIVERSITY EXAMINATIONS FOR THE DEGREE IN SCIENCE IN RENEWABLE**  
**ENERGY TECHNOLOGY AND MANAGENT**  
**3<sup>RD</sup> YEAR 1<sup>ST</sup> SEMESTER 2017/2018 ACADEMIC YEAR**  
**CENTRE: MAIN CAMPUS**

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**COURSE CODE: TET 3318**

**COURSE TITLE: RESEARCH METHODS**

**EXAM VENUE: CR**

**STREAM: BSc REN ENERGY TECH & MGT**

**DATE: 13/12/2017**

**EXAM SESSION: 9.00 – 11.00 AM**

**DURATION: 2 HOURS**

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**Instructions**

- 1. Answer question 1 (Compulsory) and ANY other two questions**
- 2. Candidates are advised not to write on question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

**QUESTION ONE (30 MARKS)**

- a. Outline the difference between “Pure Research” and “Applied Research”(5 Marks)
- b. A research activity must follow specific procedures. Discuss some of these characteristics that qualify a research process. (15 Marks)
- c. Briefly discuss the suitability and characteristics of an Experimental design approach as applied in research methodology. (10 Marks)
- d. Based on different perspectives, briefly explain the under listed research classifications. (5 Marks)
  - i. Exploratory research
  - ii. Correlational research
  - iii. Explanatory research

**QUESTION TWO (20 MARKS)**

- a. A research project/study must have an outcome. Discuss the various possible outcomes of research undertaking. (10 Marks)
- b. With reference to specific examples, briefly discuss the difference between probability and non-probability sampling techniques. (10 Marks)

**QUESTION THREE (20 MARKS)**

- a. Choosing a problem for research is one of the most frustrating experiences for students. Identify and explain some of the possible sources of research problems in your area of specialization. (5 Marks).
- b. Discuss scientific approach as applied in research methodology and how it relates to empirical approach. (15 Marks)

**QUESTION FOUR (20 MARKS)**

- a. Explain what you understand by the term “hypothesis” as well as both null and alternate hypotheses. (8 Marks)
- b. Briefly explain the difference of the following. Use examples where appropriate (12 marks)
  - i. Accuracy and Reliability
  - ii. A dependent variable and an independent variable
  - iii. An experimental group and a control group

**QUESTION FIVE (20 MARKS)**

Briefly describe the significance of the under listed components of a research proposal.

- i. Statement of the problem (3 Marks)
- ii. Research objectives (3 Marks)
- iii. Research hypotheses (3 Marks)
- iv. Literature review (3 Marks)
- v. Theoretical framework (3 Marks)
- vi. Methodology (3 Marks)
- vii. References (2 Marks)