

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE

PHYS 370: RESEARCH METHODS

STREAMS: BED, BSC Y3

TIME: 2 HOURS

DAY/DATE: THURSDAY 12/04/2018

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS:

- **Answer QUESTION ONE (30 MARKS COMPULSORY) and any other TWO QUESTIONS (20 MARKS EACH).**

QUESTION ONE

- (a) Outline the purpose for research. (6 marks)
- (b) What does research comprise of? (3 marks)
- (c) What are the advantages of presenting experimental results in a graphical form? (2 marks)
- (d) Outline possible sources from which a researcher would identify a research topic from. (4 marks)
- (e) Distinguish between experimental and theoretical research. (6 marks)
- (f) Outline two kinds of measurements that can be obtained from Nuclear Magnetic Resonance. (NMR). (4 marks)
- (g) Outline the basic steps that need to be taken when undertaking research. (5 marks)

QUESTION TWO

- (a) Outline the major considerations to make when representing data using graphs and choosing a scale for a graph. (5 marks)
- (b) Explain what errors are and outline the main types of error. (8 marks)

- (c) The following length measurements were taken using a metre rule with a sensitivity of 0.01cm for the same object.

2.02 cm

2.03 cm

2.01 cm

2.03 cm

2.01 cm

Determine the percentage error in the measurements taken. (7 marks)

QUESTION THREE

- (a) List at least five techniques used in physics research apart from NMR. (5 marks)
- (b) Out of the techniques listed in (a) above, discuss any two of them. (15 marks)

QUESTION FOUR

Explain the importance of literature review as an integral part of research and suggest credible sources that a researcher would use to carry it out. (20 marks)

QUESTION FIVE

- (a) What is a research proposal? (3 marks)
- (b) Outline the major parts of research proposals, giving a brief description of each part. (17 marks)
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