



MERU UNIVERSITY COLLEGE OF SCIENCE & TECHNOLOGY

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University Examinations 2010/2011

SECOND YEAR, FIRST SEMESTER EXAMINATIONS FOR DIPLOMA IN AGRICULTURAL EDUCATION AND EXTENSION

NAR 0240: SOIL FERTILITY AND FERTILIZERS

DATE: DECEMBER 2010

TIME: 1½ HOURS

INSTRUCTIONS: Answer *Question one* which is *Compulsory* and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) Explain the role of Nitrogen (N), phosphorus (P) and Potassium (K) in plant metabolism. (6 Marks)
- (b) Explain the following terms:
 - (i) Essential elements.
 - (ii) Micronutrients (4 Marks)
- (c) Describe FIVE ways in which soils may lose fertility. (10 Marks)
- (d) By use of an illustration, explain the four nutritional levels in plants. (10 Marks)

QUESTION TWO – (15 MARKS)

Discuss the nitrogen cycle by use of a diagram. (15 Marks)

QUESTION THREE – (15 MARKS)

- (a) Explain the concept of luxury consumption in plant nutrition. (5 Marks)
- (b) Discuss the factors that influence the composition of farm yard manure. (10 Marks)

QUESTION FOUR – (15 MARKS)

- (a) Outline the application methods of fertilizers. (8 Marks)
- (b) Describe the physical and chemical characteristics of diammonium phosphate. (7 Marks)

QUESTION FIVE – (15 MARKS)

- (a) Describe the social sampling procedures. (5 Marks)
- (b) Describe the deficiency symptoms of Calcium in plants. (5 Marks)
- (c) Explain the factors that determine the form of nitrogen to be taken up by plants. (5 Marks)