KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2010/2011

INSTITUTIONAL BASED PROGRAMME (IBP) DECEMBER SESSION

EXAMINATION FOR THE BACHELOR OF SCIENCE IN EDUCATION (B.ED SCIENCE)

KRM 300: SOIL FERTILITY AND PLANT NUTRITION

DATE: Wednesday, 27th April 2011 **TIME:** 2.00 p.m. – 4.00 p.m.

INSTRUCTIONS:

Answer Question ONE and Any Other THREE Questions

1. (a) Write short notes on the following;

   i. Cation exchange capacity
   ii. Plant deficiency symptoms
   iii. Macro nutrients
   iv. Luxury consumption level

   (b) Briefly describe three indicators of soil fertility status on smallholder farms of Africa. (6 marks)

   (c) (i) State three types of phosphate fertilizers. (3 marks)

   (ii) Explain how each of the above should be applied to maximize crop production. (6 marks)

2. (a) Explain four causes of acid soil infertility. (8 marks)

   (b) Discuss three ways of overcoming acid soil infertility. (6 marks)

3. Explain five reasons for using an integration of organic inputs and mineral fertilizers in managing soil fertility. (15 marks)

4. (a) Explain three mechanisms through which plants acquire nutrients for growth. (6 marks)

   (b) State three main problems associated with management of soil phosphorus. (3 marks)

   (c) Discuss factors influencing fixation of phosphorus in the soil. (6 marks)

5. (a) Discuss edaphic factors influencing biological nitrogen fixation on smallholder farms in sub-Saharan Africa. (10 marks)

   (b) Explain five (5) practices for enhancing nitrogen fixation in smallholder farms. (5 marks)