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PRINCIPLES OF CROP PRODUCTION I
AND SOIL SCIENCE
Oct./Nov. 2011
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AGRICULTURE
MODULE I

PRINCIPLES OF CROP PRODUCTION I AND SOIL SCIENCE

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

- Answer booklet;*
- Calculator.*

*This paper consists of TWO sections; A and B.
Answer any THREE questions from section A and any TWO questions from section B.
Maximum marks for each part of a question are shown.*

This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

OCT / NOV 2011

SECTION A: CROP PRODUCTION

Answer any **THREE** questions from this section

1. (a) Mr. Kamau was advised to use a rate of 100Kg P_2O_5 per hectare. Calculate amount of DAP (18:46:0) Mr. Kamau would use for his 2.5 hectares farm. (6 marks)
- (b) Describe cultural methods used to control crop pests. (14 marks)
2. (a) (i) Given that, the spacing for maize is 75cm by 25cm . Determine the plant population for 2.5 hectares. (6 marks)
- (ii) Explain how soil fertility influences the spacing of maize crop. (4 marks)
- (b) Describe the characteristics of organic manures. (10 marks)
3. (a) State the information contained on the label of certified seeds. (6 marks)
- (b) Discuss the advantages and disadvantages of vegetative planting materials. (14 marks)
4. (a) Using illustrations, describe the pedigree method of selection. (10 marks)
- (b) Outline the advantages of *sesbania sesban* species. (4 marks)
- (c) Describe the following terminologies.
 - (i) pollarding;
 - (ii) coppicing. (6 marks)
5. (a) Explain the factors that are considered when designing crop rotation programme. (10 marks)
- (b) Describe the factors that determine the quality of seed maize. (10 marks)



SECTION B: SOIL SCIENCE

Answer any *TWO* questions from this section.



6. (a) Explain the principles governing cation exchange. (10 marks)
- (b) Explain factors influencing soil porosity. (10 marks)
7. (a) A metal cylinder measuring 5cm in a diameter and 4.4cm in length was driven into the soil. The soil removed was oven dried and the weight found to be 100.2g. Calculate the bulk density of the soil. (6 marks)
- (b) Explain how aluminium ions increase soil acidity. (6 marks)
- (c) Explain the effects of soil pH on nutrient availability. (8 marks)
8. (a) Describe the soil properties that influence buffering capacity. (10 marks)
- (b) Describe the stages involved in formation of sedimentary rocks. (10 marks)