CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

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

ANSC 334: BIOTECHNOLOGY IN ANIMAL NUTRITION

STREAMS: BSC (ANSC) **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY06/12/2017 **8.30 A.M. – 10.30 A.M.**

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND ANY 2 QUESTIONS IN SECTION B

SECTION A

1. Describe the roles of the following in animal nutrition:
   - (a) Mannan oligosaccharides (MOS) [4 marks]
   - (b) Microbes in the digestion of lipids in the rumen [4 marks]
   - (c) Addition of antibiotics in animal feeds [4 marks]
   - (d) Selection marker genes [4 marks]
   - (e) Ionophores [4 marks]

2. Define the following terms
   - (a) Prebiotics [2 marks]
   - (b) Biotechnology [2 marks]
   - (c) Cloning [2 marks]
   - (d) Non protein nitrogen [2 marks]
   - (e) Plasmid [2 marks]
   - (f) Somatic cell [2 marks]
   - (g) Ionophores [2 marks]
   - (h) Cellulase [2 marks]
   - (i) DNA [2 marks]
   - (j) Feed additives [2 marks]

SECTION B

3. Farming is one form of biotechnology.
   (a) Explain the above statement [4 marks]
   (b) Describe 3 industrial applications of biotechnology [6 marks]
   (c) What is parthenogenesis [2 marks]
   (d) List 3 impacts of biotechnology on the community [3 marks]

4. Animal nutrition accounts for over 60% of the total production cost in most species of animals
   (a) Discuss two (2) factors which limit the availability of nutrients from feeds. [4 marks]
   (b) Describe 2 ways of improving the utilization of protein in ruminant rations using biotechnology. [8 marks]
   (c) Give the proportions of volatile fatty acids in the rumen. [3 marks]

5. Efficiency in feed utilization can be achieved by availing more nutrients or altering the partitioning of nutrients in the body.
   (a) Use 2 examples to show how the anti-nutritive factors in feeds can be overcome with biotechnology. [8 marks]
   (b) Discuss the use of growth hormones. [7 marks]
