JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

THIRD YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE ANIMAL SCIENCE

2016/2017 ACADEMIC YEAR

REGULAR

COURSE CODE: AAS 3311

COURSE TITLE Crop Residues and Agro-Industrial By-Products

EXAM VENUE: **STREAM: BSc. (Animal Science)**

DATE: **EXAM SESSION:**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in section A and ANY other 2 Questions in section B.**
2. **Candidates are advised not to write on question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A [30 MARKS]

Answer ALL questions from this Section.

1. Define the following terms with examples:
    a. Crop residues **(2 Marks)**
    b. Harvest Index (HI) **(2 Marks)**
    c. Feed budget **(2 Marks)**

2. Differentiate between the following:
    a. Animal by-products and Agro-industrial by-products **(2 Marks)**
    b. Composting and compacting crop residues **(2 Marks)**
    c. Supplementation and physical treatments of animal feed **(2 Marks)**

3. Explain the following in relation to utilization of agro-industrial by-products:
    a. Constraints to production of agro-industrial by-products **(3 Marks)**
    b. Molasses as a good source of energy **(3 Marks)**
    c. Sunflower rations for Dairy animals **(3 Marks)**

4. Discuss the challenges of using crop residues in animal feed based on the following:
    a. Production season **(3 Marks)**
    b. Production location **(3 Marks)**
    a. Quality of feed **(3 Marks)**

SECTION B [40 MARKS]

Answer ANY TWO questions from this Section.

5. Crop residues have been used as livestock feed resources since time immemorial, all over the world. Discuss their significance under the following topics: **(20 Marks)**
    a. Importance of crop residues in livestock production,
    b. Management of crop residues,
    c. Quantifying the quality of crop residues,
    d. Harvesting, treatment and storage of crop residues

6. Animal by-products are materials derived from animals which may be incorporated into animal feed. Discuss the following: **(20 Marks)**
    a. State the difference between animal products and animal by-products and give examples of both,
    b. Animal by-products that are considered as low risk and why,
    c. Animal by-products that are considered high risk and why

7. Discuss the chemical treatment practices of crop residues under the following topics: **(20 Marks)**
    a. Limitations to chemical treatment of crop resides,
    b. Advantages of using urea over other chemical treatments,
    c. Storage of chemically treated crop residues