



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

**THIRD YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN HORTICULTURE,
AGRONOMY, AGRICULTURAL EXTENTION, ANIMAL SCIENCE,
AGRICULTURAL ECONOMICS AND BACHELOR OF EDUCATION
WITH INFORMATION TECHNOLOGY**

MAIN CAMPUS

AAG 306: FARM MATERIALS AND STRUCTURES

Date: 6th June, 2017

Time: 8.30 - 11.30 am

INSTRUCTIONS:

- Answer ALL the questions in SECTION A and THREE questions in SECTION B.

AAG 306: FARM MATERIALS AND STRUCTURES

INSTRUCTIONS:

Answer ALL the questions in SECTION A and three questions in SECTION B.

SECTION A:

40 MARKS: Answer all the questions in this section

- Q1. Discuss briefly the following wood characteristics:
- i. Natural decay resistance (1 Mark)
 - ii. Strength (1 Mark)
 - iii. Toughness (1 Mark)
 - iv. Stiffness (1 Mark)
- Q2. Briefly discuss why certain wood preservatives are better for exterior or interior jobs giving examples of such preservatives in each case. (3 Marks)
- Q3. Describe four advantages of plastics over other materials used in the agricultural industry. (4 Marks)
- Q4. Distinguish between ferrous and non-ferrous metals. (4 Marks)
- Q6. Discuss the following properties of metals:
- a) Malleability (1 Mark)
 - b) Ductility (1 Mark)
 - c) Compression strength (1 Mark)
 - d) Hardness (1 Mark)
- Q7. What is concrete? Discuss briefly the four main properties of concrete. (5 Marks)
- Q8. Distinguish between thermoplastics and thermosetting plastics. (2 Marks)
- Q9. Discuss the type of materials used in a typical smallholder zero grazing unit (4 Marks)
- Q10. Briefly discuss the following aspects of concrete defects
- i. Colour variation (1 Mark)
 - ii. Cracking (1 Mark)
 - iii. Rain damage (1 Mark)
 - iv. Spalling (1 Mark)
 - v. Efflorescence (1 Mark)
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Q11. Briefly discuss four important factors to consider when choosing materials for construction for constructing what units? (4 Marks)

SECTION B: (30 MARKS): Answer any THREE questions from this section. Each is 10 Marks.

Q12. Discuss the following heat transfer processes and their importance in ventilation design.

- i. Conduction
- ii. Convection
- iii. Radiation

Q13. Discuss the importance of insulation and vapour barriers in humidity and heat transmission in buildings used for cold storage. Indicate methods of ensuring there is sufficient insulation and vapour barrier for such buildings indicating the materials used and the structural design requirements.

Q14. Discuss some of the important properties that one needs to consider in choosing materials when planning to construct a greenhouse that would provide the most optimal growing conditions.

Q15. Discuss in detail the requirements for barbed wire fence construction.