

UGANDA MARTYRS UNIVERSITY

FACULTY OF AGRICULTURE

Bachelor of Science in General Agriculture

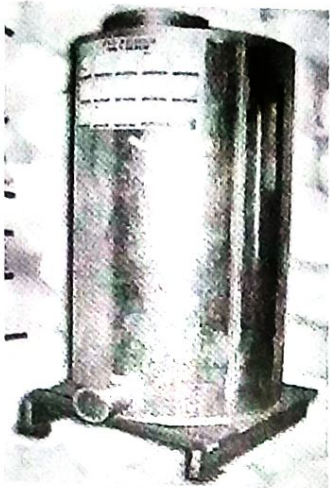

Supplementary/Special Examination: Academic Year 2014-2015

June, 2015

**Module AG/08/OA10: Appropriate Agro-mechanization
Technology**

INSTRUCTIONS:

- Read and understand the questions before answering
- Select and answer any **Four (4) Questions**
- Start each answer on a separate answer sheet
- You are allowed Three (3) **Hours** for the examination

Questions	Marks
<p>Question 1:</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px; margin: 5px;">1</div> <div style="border: 1px solid black; padding: 2px 10px; margin: 5px;">2</div> </div> <p>a) Figures 1 and 2 are metallic storage bins for storing grains of cereals, legumes and oil seeds. The storage bins can be used for both indoor and outdoor storage. [15 Marks]</p> <ol style="list-style-type: none"> i. Explain why the two bins are best for indoor storage. ii. Due to inadequate space in the rooms, a farmer may decide to place the storage bins outside. To obtain good performance under such a circumstance describe the best conditions in which farmer should handle the storage bins. iii. If both are used for outdoor storage what are the advantages of storage 2 bin over storage bin 1 under Ugandan conditions? <p>b) What will be the influence of environmental temperature on milk production in zero-grazed dairy cattle and egg production of layers in tropical countries like Uganda? [5 Marks]</p> <p>c) Explain how relative humidity affects drying of maize and the significance of safe storage moisture content of any cereal crop [5 Marks]</p> <p>Question 2:</p> <p>a) Figure 1 shows a sketch of simple low pressure drip irrigation kit for very small scale irrigation of vegetables. Study the sketch and answer the questions that follow [13 Marks]</p>	

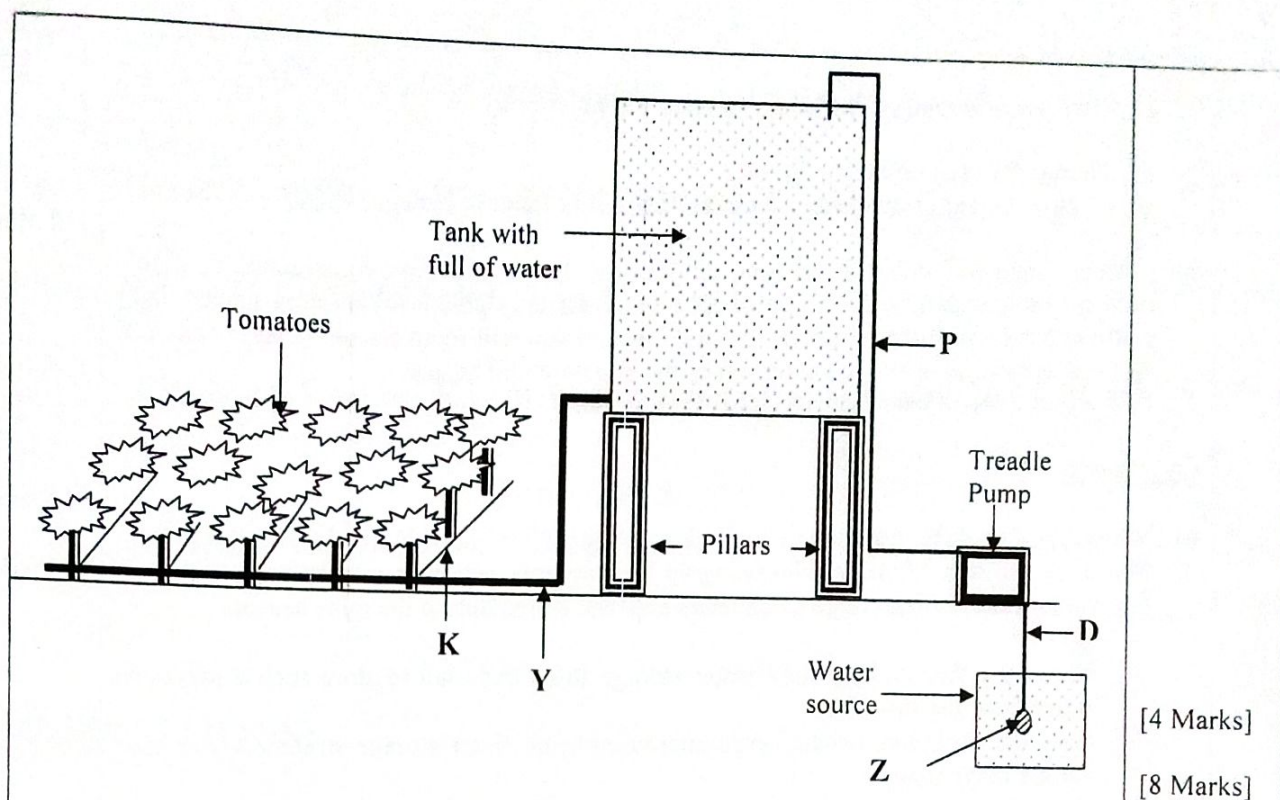


Figure 1

- Name the parts D, Z, P and Y. What are their uses? [4 Marks]
- Describe how you can reduce the cost of the system while maintaining the current pressure? [8 Marks]
- If farm vehicles are not regularly serviced they can easily suffer from engine knock. Under such a case explain how the engine knock will be caused [10 Marks]
- Without sketches describe how 4-stroke petrol engine works [15 Marks]

Question 3:

- Define physiological maturity and explain why Opio-kello Gabriel of Kyoga Citrus Farm in Apac district should always harvest his mangoes at the physiological maturity. What are the signs of physiological maturity of mango fruits? [12 Marks]
- Crib is the cheapest structure for drying maize for Uganda's smallholder farmers. [7 Marks]
 - Describe the crib and explain how it works [6 Marks]
 - What are the main factors needed in construction to achieve fast and uniform drying in the crib under Ugandan climatic conditions?

Question 4:

- Describe how will you carry out plough depth setting and width of cut setting of animal drawn mould board ploughs [3 Marks]
- Explain why animal drawn moldboard usually becomes unstable and difficult to work with after using it for about four months? What is the solution to this instability? [7 Marks]
- Describe the water distribution from a trickler (emitter) that takes place in light soils and heavy soils? [10 Marks]

Question 5:

<p>a) Describe the best method including reasons for applying</p> <p>i) Humus for organic maize farming</p> <p>ii) Organic liquid pesticides for tomatoes when it is 3 weeks old and when 2 months old.</p>	<p>[5 Marks]</p>
<p>b) NAADS hires you as one of the rural service providers to undertake construction of simple deep manure system housing structures (most commonly practiced) for zero-grazed dairy cattle in Mukono district. Explain the main factors you will focus on such that the animals will feel comfortable and management of the structure will be easy.</p> <p>c) Describe the use of electrical system in farm vehicles</p>	<p>[12 Marks]</p>
<p>Question 6:</p>	<p>[5 Marks]</p>
<p>a) Water for livestock production and human use in the cattle corridor stretching from Mutukula through Mbarara, Nakasongola to Karamoja region is mainly harvested from rain water run-offs from large catchments area and stored during the rainy season.</p> <p>i) Name any two underground water storage structures used to store such a harvested water from the run-offs</p>	<p>[8 Marks]</p>
<p>ii) Give the problems usually encountered with the water storage structures you have named in (i) above</p>	<p>[12 Marks]</p>
<p>b) Explain with clear reasons how you can spray liquid organic pesticides on crops during small wind current using shoulder mounted knapsack sprayer</p>	
<p>c) Describe the uses of the major components of animal drawn conservation tillage planter used by farmers in Uganda</p>	<p>[13 Marks]</p>
<p>Question 7:</p>	
<p>a) You are hired as a consultant by the Local Councils on Finance Committee in your sub-county to provide technical specifications for ox-drawn mould board plough. What are the most critical parameters in the plough that you will include in your specifications? Explain the importance of these parameters. Which is the most important part of this plough and why?</p>	
<p>b) Housing is one of the most important things in poultry farm especially layers. Explain why such housing for layers must be well ventilated and water proof? Describe how the birds will loose energy to the housing</p>	