



**Bachelor of Animal Science (B.ASc)
Faculty of Animal Science & Export Agriculture
Uva Wellassa University**

**Year II Semester I
End Semester Examination - January 2009**

**Fundamentals of Agricultural, Food and Biochemical Engineering
(EAG 232-0)**



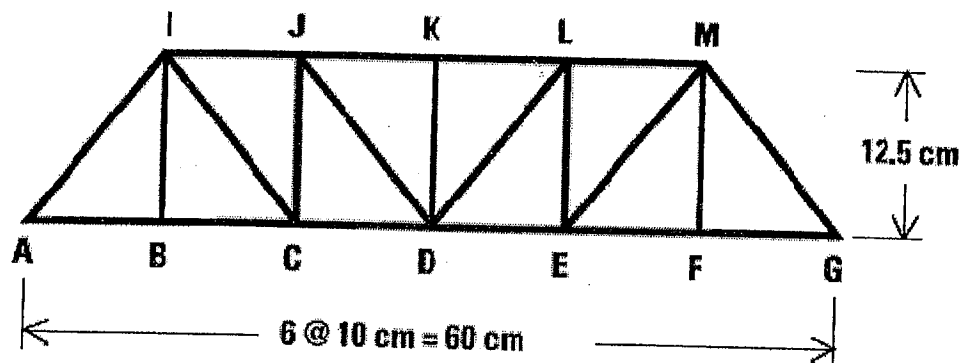
Instructions

Answer **five (5)** questions only

No. of questions : Six (06)
No. of pages : Three (03)
Time : Three hours (3 hours)
Total marks allocated : 40/100

1. Write short notes on the following;
 - a. Dry and Saturated lapse rates
 - b. Condensation nuclei
 - c. Stable and Unstable atmosphere
 - d. Formation of precipitation
2. One year after the completion of the new Grant Road Bridge, the Hauptville Town Engineer inspects the structure and finds that it is performing well. Though the bridge has been carrying a lot of traffic, its structural members show no signs of distress or deterioration. Nonetheless, the Town Engineer is still somewhat concerned about the bridge. Because of a major construction project nearby, many heavily loaded dump trucks have been using Grant Road recently. What if one of these trucks is heavier than the legal weight limit? How much of an overload would cause the structure to collapse? The Town Engineer decides to perform a complete structural evaluation to determine the overall level of safety of the Grant Road Bridge.

Assuming that you are the Town Engineer of Hauptville your job is to analyze the Grant Road Bridge and evaluate its overall level of safety. Specifically, you must calculate the factor of safety for every member in one of the main trusses, then determine the overall safety factor for the structure. (State all your assumptions)



3. Citing suitable examples discuss the applications of fermentation processes in value addition to industrial by-products and waste materials.
4. Write short notes on the following.
 - a. Single cell proteins
 - b. Sterilization
5.
 - a. Using an appropriate diagram briefly explain the working principle of mechanical refrigeration system.
 - b. Briefly outline the factors to be maintained in a refrigeration system to have a better quality product.
 - c. Mr. Ruwan is running a small scale meat processing factory and he is producing sausages using pork. He made a recipe where the main ingredients were pork and lard. Sausage mixture must contain 30% of fat. The Pork going to be used contains 20% of fat, 65% of water and 15% of protein and the lard contains 90% of Fat, 3% of protein and 5% of water. How much of Pork and lard to be blended to obtain a sausage mixture of 100kg with 30% fat content.

6.

- a. What is meant by "Commercial Sterilization of Food"?
- b. Following Unit Operations involved in In-Container Processing are considered to be very critical. Briefly explain what is done in each of the Unit Operation and why it is critically important.
 - i. Filling the containers
 - ii. Exhausting
 - iii. Double Seaming
 - iv. Processing
- c. Discuss the characteristics to be considered in selecting a container for In-Container Processing.

