The Open University of Sri Lanka

Faculty of Engineering Technology

Diploma/Degree in Industrial Studies (Agriculture)

Final Examination- 2008/2009

AEI6234 Environmental controls in farm structures

Date : **07-04-2009**

Time : **9.30 am -12.30 pm**

SECTION 2: Answer question 1 and any three others.

01. a) Clearly differentiate thermal conduction and thermal convection.
b) A wall of cattle shed has been built of concrete and its thickness is 400mm and cross sectional area is 20m^2. The temperature of one side is 25°C and the other end is -15°C. Assume that the thermal conductivity of concrete is 0.56 W/mK.
i) Determine the resistance for heat transfer through the wall
ii) Calculate the thermal flux

02. Write short notes on any four (04)of the followings.
a)Basic methods of heat transfer
b)Psychrometric chart and its application on farm structures
c)Hooke's Law
d) Zone planning
e) Evaporative cooling and its application in Sri Lanka

03. A farmer in Dambulla area has 10 Ac of bare land and he is decided to establish a farm in that land including following listed things.
Cattle shed
Poultry unit
Paddy cultivation in 2Ac of land
Small vegetable orchard
Sales out let
Biogas generating unit
You are required to advice him to achieve his goal with maximum output. Using your knowledge on farm layout and zone planning write an essay on "way that you guide the farmer".

04.a) Write a brief account on basic types of loads act on a farm structures. Give suitable examples for each category.
b) Discuss the importance of well designed and well constructed foundation in constructing a cattle shed in Muthurajawela area.

05. a) Write a brief summary on contribution of human for enhancing the green house effect and its consequences.

b) What do you think about the necessity of green houses (protected cultures) under Sri Lankan condition? Comment your ideas.

06. Write an essay on applications of environmental controls in animal husbandry. Illustrate your answer using a suitable example from Sri Lanka.