



The Open University of Sri Lanka
Faculty of Engineering Technology
Bachelor of Industrial Studies Program

Final Examination- 2011/2012

AEI6234 Environmental Controls in Farm Structures

Date : 21.03.2012
Time : 0930-1230
Duration : Three (03) hour.

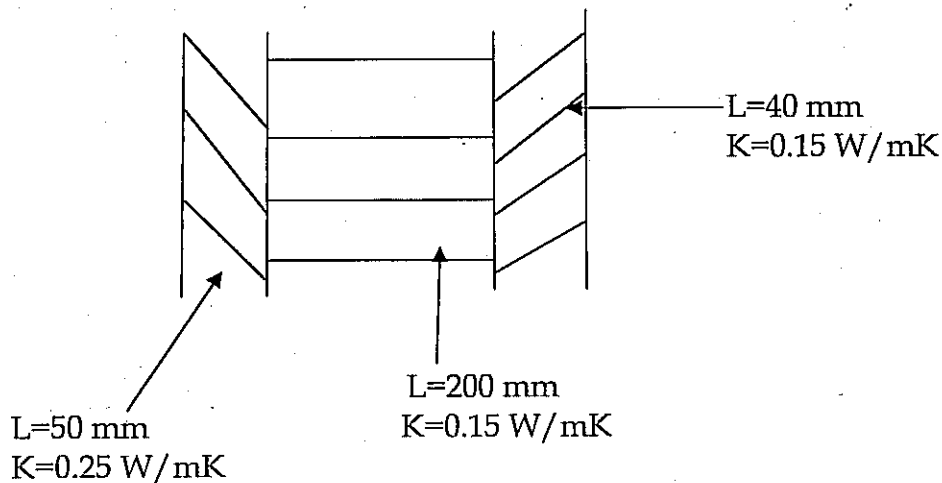
Answer four questions including question no 1.

1.
 - a) Define the term of "stress".
 - b) Write the Hook's law.
 - c) Graphically represent the behaviour of mild steel rod under tension and name all important points and limits.
 - d) Two timber posts 200mm square and 5mm height are subjected to an axial load of 200kN each. One is made of Pine timber ($E=7800 \text{ N/mm}^2$) and other is Oak timber ($E=15500 \text{ N/mm}^2$). How much they shorten due to the applied force?

2. Write short notes on any three (03) of following.

- a) Farmstead planning
- b) Methods of heat transfer
- c) Importance of insulation
- d) Psychometric chart
- e) Critical factors to be considered in successful grain storage

3. A wall is constructed as shown in below.



- a) Calculate the unit area thermal resistance of the wall.
 - b) Calculate the heat flux through the wall (assume that one side of the wall is at 20°C and other side is at -5°C).
4. Write an essay on "application of environmental controls in agriculture" using five suitable examples)
 5. Write an essay on important factors to be considered in selection of a site to establish cattle shed (for 80 heads of imported breed) in Nuwara Eliya area.
 - 6.a) Write an essay on "principle methods of altering animal wastes".
 - b) Critically evaluate the importance of monitoring environmental factors inside animal houses in regular basis.