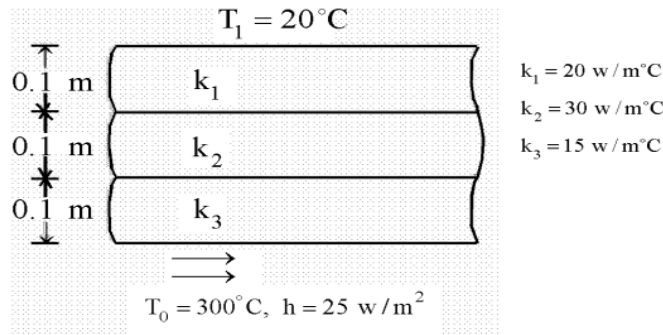


SECTION C

3. Attempt any *one* part of the following: 10x1 = 10
- (a) Describe pre-processing and post processing in finite element analysis and explain their advantages
 - (b) Explain exact and approximate solution and discuss the applications of finite element method.
4. Attempt any *one* part of the following: 10 x1 = 10
- (a) Explain the variational approach of finite element method. What are its limitations?
 - (b) Derive the stress-strain relationship and strain displacement relation
5. Attempt any *one* part of the following: 10x1 = 10
- (a) Discuss the application of finite element method to elasticity problems and explain the concept of shape function
 - (b) A composite wall consists of three walls as shown in the figure. The inner temperature is $T = 20^\circ\text{C}$ and convective heat transfer takes place on the outer wall, $T_o = 300^\circ\text{C}$. Determine the temperature distribution in the wall.



6. Attempt any *one* part of the following: 10x1 = 10
- (a) Explain and differentiate between local and global coordinate system in finite element method
 - (b) Describe the lagrangian shape function with an example.
7. Attempt any *one* part of the following: 10x1 = 10
- (a) Explain the characteristics of triangular element. Also explain problem modelling
 - (b) Explain in detail the problem solving on different FEM software packages such as ABAQUS and NISA