



EASTERN UNIVERSITY, SRI LANKA
FIRST YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE – 2009/2010
(MAY/JUNE 2011)
AEN 1101 – APPLIED MECHANICS (1:15/00)

Answer all questions
Time: One hour

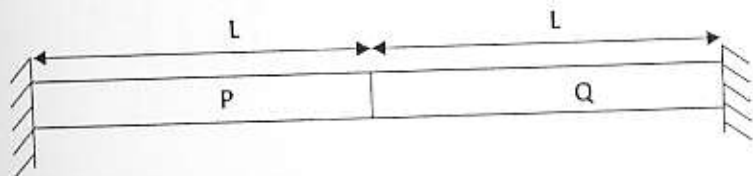
01. (a) State the law of polygon of force.

(b) Consider a force F acting at an angle θ with the horizontal. Write down the resolved components of the force.

(c) State Newton's 2nd law of motion. A body of mass m with initial velocity u moves for a period of t seconds due to the application of force F and attains the final velocity v . Show that $F = k m a$, where a is the acceleration of the body.

(d) Diagrammatically illustrate the types of stresses caused in a metallic body with relevant mathematical expressions.

02. Two rods P and Q are made up of different metals having the same area A and the same length L are placed between two rigid walls as shown in the figure. The coefficients of linear expansion of P and Q are α_1 and α_2 respectively and their Young's Moduli are Y_1 and Y_2 . If the temperature of both rods is now raised by T degrees, determine



- (i) The force exerted by one rod on the other
- (ii) The new length of rod P
- (iii) The new length of Q