EASTERN UNIVERSITY SRI LANKA
FIRST YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE- 2010/2011
(Feb/ March 2012)
AEN 1101 – APPLIED MECHANICS (1:15/00)
(Proper/ Repeat)

Answer all questions
Time : 1 hour

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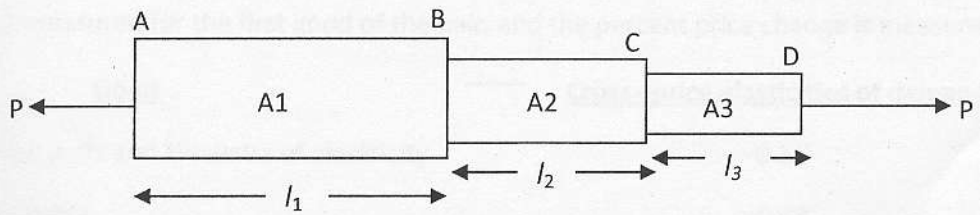
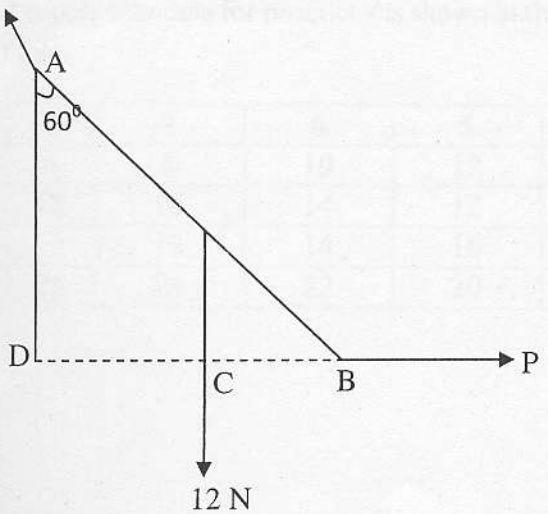
01. (a) Derive an expression for the total elongation bar ABCD, subjected to an external force P. Assume that the modulus of elasticity of the bar as E.



Cross sectional area of section AB - A1
Cross sectional area of section BC – A2
Cross sectional area of section CD – A3

Length of section AB – l_1
Length of section BC – l_2
Length of section CD – l_3

(b) A uniform rod AB of weight 12 N is hinged to a vertical wall at A as shown below. The end B is pulled aside by a horizontal force until it is in equilibrium and inclined at 60^0 to the wall. Find the magnitude of the horizontal force and the direction of the force acting at the hinge. (Hint: use Lami's theorem)



02. Draw the shear force and bending moment diagrams for the beam ABC as shown in figure below. The beam is pin pointed at A and is supported by a cable at B.