EASTERN UNIVERSITY, SRI LANKA
FACULTY OF AGRICULTURE
FIRST YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE – 2004/2005
AEN 1101 APPLIED MECHANICS (1:15/00)

Answer all questions
Time: 01 hour

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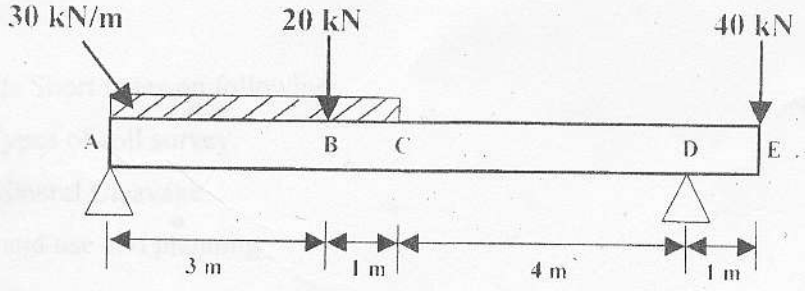
1. (a) Define the following terms,
   (i) Ductility
   (ii) Elastic limit
   (iii) Factor of safety

   (b) An electric train travelling between two stations 5 km apart completes the journey in 5 minutes. During the first 30 seconds, train is moving with uniform acceleration. Uniform retardation begins at the last 20 seconds to stop train. The train is moving with uniform velocity for the remaining portion of journey. Calculate,

   (i) Uniform velocity in km/h.
   (ii) Acceleration of the train.
   (iii) Retardation in m/s^2.

2. (a) Illustrate different kinds of load applied on a beam.

   (b)



In the diagram shown above, the beam ABCDE is simply supported at points A and D. The beam carries a uniformly distributed load of 30 kN/m between the points A and C and concentrated loads of 20 kN and 40 kN at the points B and E, respectively.

   (i) Calculate the support reactions at A and D.
   (ii) Draw shear force and bending moment diagrams.