12 When an increasing force is applied to a steel cable it will eventually reach its elastic limit.

(a) State what is meant by the elastic limit.

(1)

.....

.....

(b) The elastic limit of a steel cable was reached when a force of 13.4×10^6 N was applied. The extension of the cable was 0.126 m.

length of cable = 6.00 m
cross-sectional area of cable = 9.60×10^{-3} m^2

(i) Calculate the strain of the cable at its elastic limit.

(2)

.....

.....

.....

Strain = ...

(ii) Calculate the stress in the cable at its elastic limit.

(2)

.....

.....

.....

Stress = ...

(Total for Question 12 = 5 marks)