

**13** The SI system of units was established in 1960. There are seven base units in the SI system, including the metre which is the base unit of length.

(a) Give the SI base units of energy.

(1)

(b) In the 17th century, Huygens suggested that the unit of length should be defined by the length of a ‘seconds pendulum’. This is a simple pendulum that takes exactly 1 second to swing from one extreme position to the other.

(i) Calculate the length of a simple pendulum that swings from one extreme position to the other in 1.00 s.

(2)

Length = .....

(ii) Suggest a disadvantage of basing the metre on the length of a ‘seconds pendulum’.

(1)

**(Total for Question 13 = 4 marks)**