

- 3 (a) (i) Define potential energy.

.....  
 ..... [1]

- (ii) Distinguish between *gravitational* potential energy and *elastic* potential energy.

gravitational potential energy .....  
 .....  
 elastic potential energy .....  
 ..... [2]

- (b) A small sphere of mass 51 g is suspended by a light inextensible string from a fixed point P.

The centre of the sphere is 61 cm vertically below point P, as shown in Fig. 3.1.

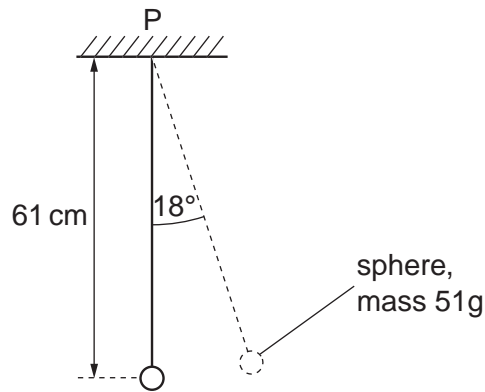


Fig. 3.1

The sphere is moved to one side, keeping the string taut, so that the string makes an angle of  $18^\circ$  with the vertical. Calculate

- (i) the gain in gravitational potential energy of the sphere,

gain = ..... J [2]

- (ii) the moment of the weight of the sphere about point P.

moment = ..... N m [2]