



Oxford Cambridge and RSA

GCSE Physics B (Twenty First Century Science)

J259/01 Breadth in Physics (Foundation Tier)

Question Set 7

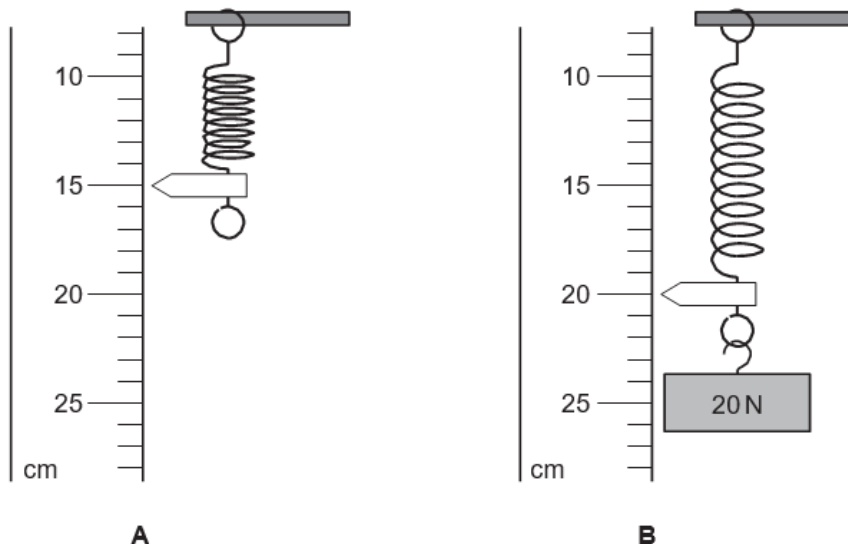
Multiple Choice Questions

1

Ali hangs a spring next to a ruler with a centimetre scale, as shown in the diagram **A**.

He attaches a 20 newton (N) weight to the bottom of the spring.

The spring stretches as shown in **B**.



(a) (i) What is the correct extension (in **metres**) of the spring in diagram **B**?

Put a **(ring)** around the correct answer.

- 0.05 m 0.15 m 0.25 m 0.35 m**

[1]

(ii) Show that the spring constant is 400 N/m.

[3]

(b) Calculate the **energy stored** in the spring when it is stretched as in (a).

Energy stored = J

[3]

(c) When Ali adds another 20 N weight, the extension doubles.

Describe the relationship between force and extension.

[1]

- (d) Ali pulls the spring in diagram **B** downwards a further 2 cm and then lets go.

Ali

I did work on the spring when I pulled it downwards. This increases the energy stored in the spring. When I let go of the spring, the mass moves up and down several times, with smaller and smaller movements. Eventually the mass stops moving.



Describe what happens to the energy stored in the spring when Ali lets go.

[3]

Total Marks for Question Set 7: 11

Resource Materials

Question Set No: 7

Equations in Physics

change in internal energy = mass \times specific heat capacity \times change in temperature

energy to cause a change in state = mass \times specific latent heat

for gases: pressure \times volume = constant

(for a given mass of gas and at a constant temperature)

$(\text{final speed})^2 - (\text{initial speed})^2 = 2 \times \text{acceleration} \times \text{distance}$

energy stored in a stretched spring = $\frac{1}{2} \times \text{spring constant} \times (\text{extension})^2$

potential difference across primary coil \times current in primary coil =

potential difference across secondary coil \times current in secondary coil

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