OCR
Oxford Cambridge and RSA

GCSE Physics B (Twenty First Century Science)

J259/01 Breadth in Physics (Foundation Tier)

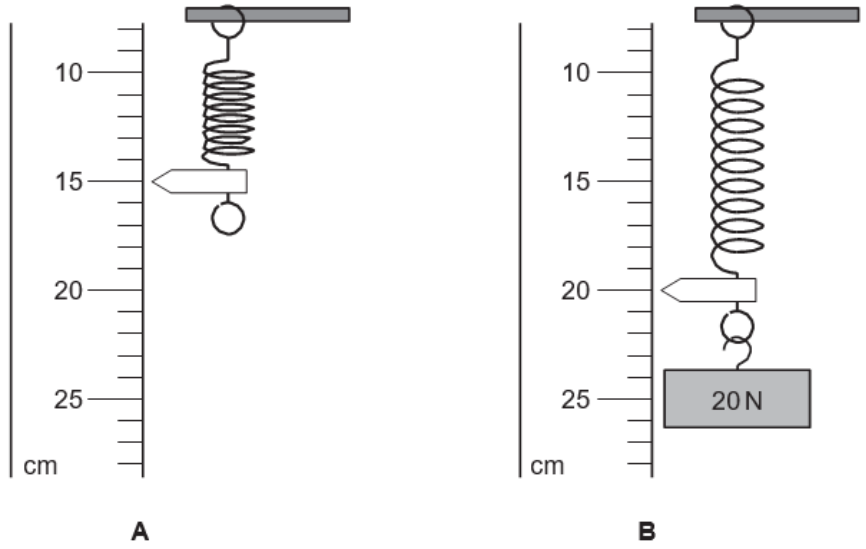
Question Set 7

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

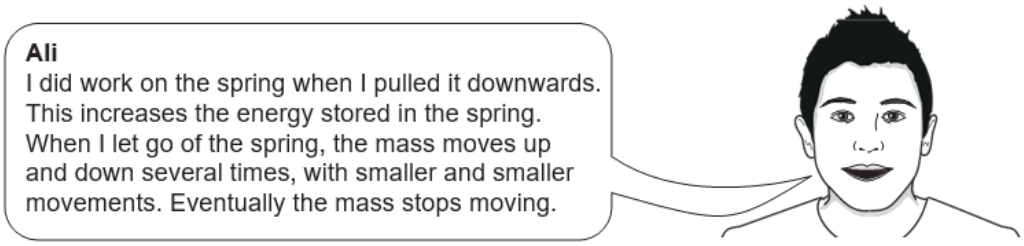
[3]

(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.



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 × specific heat capacity × change in temperature

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

for gases: pressure × 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 = ½ × spring constant × $(\text{extension})^2$

potential difference across primary coil × current in primary coil =
potential difference across secondary coil × current in secondary coil