30 A particle has a charge of 4.8×10^{-19} C. The particle remains at rest between a pair of horizontal, parallel plates having a separation of 15 mm. The potential difference between the plates is 660 V.

What is the weight of the particle?

A 2.1×10^{-14} N

B 2.1×10^{-15} N

C 2.1×10^{-17} N

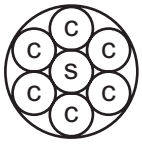
D 1.1×10^{-23} N

31 Two wires P and Q made of the same material and of the same length are connected in parallel to the same voltage supply. Wire P has diameter 2 mm and wire Q has diameter 1 mm.

What is the ratio $\frac{\text{current in P}}{\text{current in Q}}$?

A $\frac{1}{4}$ **B** $\frac{1}{2}$ **C** $\frac{2}{1}$ **D** $\frac{4}{1}$

32 An electric power cable consists of six copper wires c surrounding a steel core s.



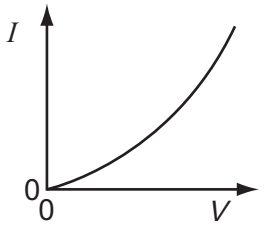
1.0 km of one of the copper wires has a resistance of 10 Ω and 1.0 km of the steel core has a resistance of 100 Ω.

What is the approximate resistance of a 1.0 km length of the power cable?

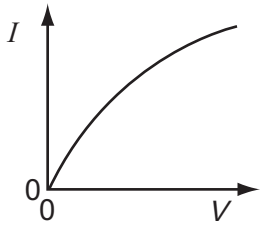
A 0.61 Ω **B** 1.6 Ω **C** 160 Ω **D** 610 Ω

33 Which graph best represents the way the current I through a filament lamp varies with the potential difference V across it?

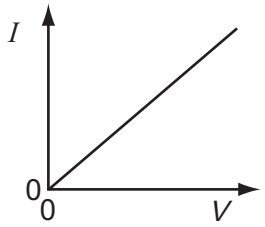
A



B



C



D