

- 7 A student is using a power supply that produces a sinusoidal output. The meters on the supply show that the output voltage V has a root-mean-square (r.m.s.) value of 14 V with a frequency of 750 Hz.

The variation with time t of the output voltage V may be represented by the expression

$$V = V_0 \sin \omega t.$$

- (a) Determine the value of

(i) V_0 ,

$$V_0 = \dots\dots\dots \text{ V [1]}$$

(ii) ω .

$$\omega = \dots\dots\dots \text{ rad s}^{-1} \text{ [1]}$$

- (b) A capacitor with a large capacitance is connected across the terminals of the supply.

Suggest and explain why this may lead to a large current from the supply.

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 [3]