

- 7 (a) Explain what is meant by the *root-mean-square* (r.m.s.) value of an alternating voltage.

.....

.....

..... [2]

- (b) An alternating voltage V is represented by the equation

$$V = 220 \sin(120\pi t),$$

where V is measured in volts and t is in seconds.

For this alternating voltage, determine

- (i) the peak voltage,

peak voltage = V [1]

- (ii) the r.m.s. voltage,

r.m.s. voltage = V [1]

- (iii) the frequency.

frequency = Hz [1]

- (c) The alternating voltage in (b) is applied across a resistor such that the mean power output from the resistor is 1.5 kW.

Calculate the resistance of the resistor.

resistance = Ω [2]