6(a)   With the aid of a diagram, explain the principle of operation of an iron-cored transformer.

[4]

(b)   A graph of the variation of the power P with time t across a resistor of 3.0 Ω is shown in Fig. 6.1.
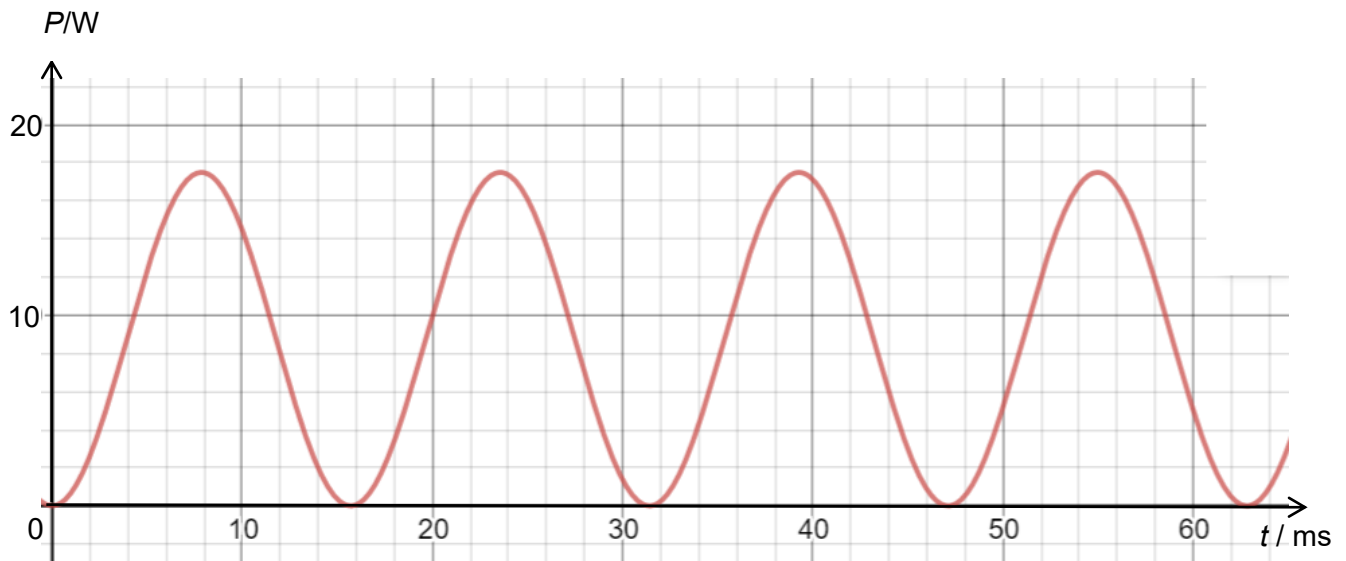
P/W

Fig. 6.1

For this power P, determine   [5]

(i)   the frequency of the sinusoidal voltage,

(ii)   the peak power,

(iii)   the mean power,

(iv)   the root-mean-square voltage.

(v)   the root-mean-square value of the current.