6   A sinusoidal voltage supply of peak voltage 8 V and period of 1.2 s is connected to a circuit as shown in Fig. 6.1. The circuit consists of four resistors P, Q, R and S, which has a resistance of 10 Ω each.
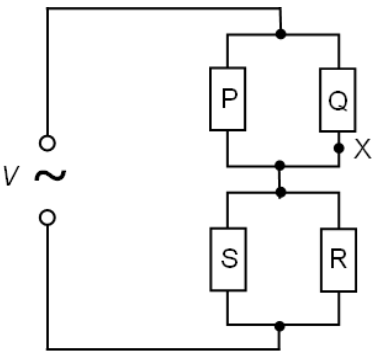

Fig. 6.1

(a)   Calculate the maximum potential difference across resistor P.

potential difference = …………………………………… V   [3]

(b)   Determine the peak power dissipated across resistor P.

peak power = …………………………………… W   [2]

(c)   An ideal diode is connected in series with resistor Q at point X.

On Fig. 6.2, sketch the variation with t of the p.d. across resistor Q for a time of 1.2 s. Add a scale to the y-axis.
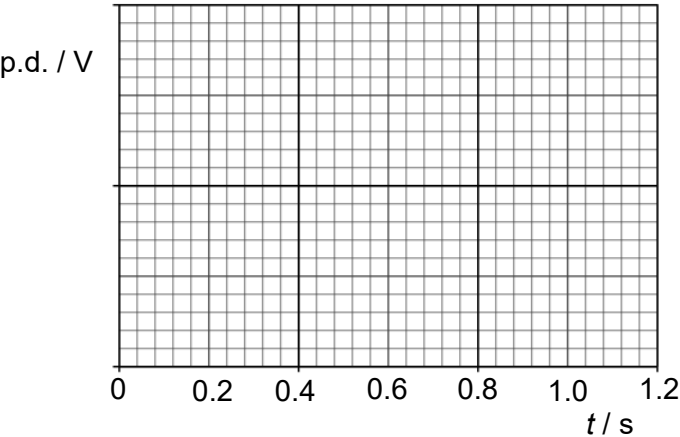

p.d. / V

0   0.2   0.4   0.6   0.8   1.0   1.2

t / s

Fig. 6.2   [2]

[Total: 7]