5 **(a)** In Fig. 5.1, sketch the variation with frequency f of the stopping potential V_s when electromagnetic radiation is incident on a metal surface of work function energy 2.4 eV.

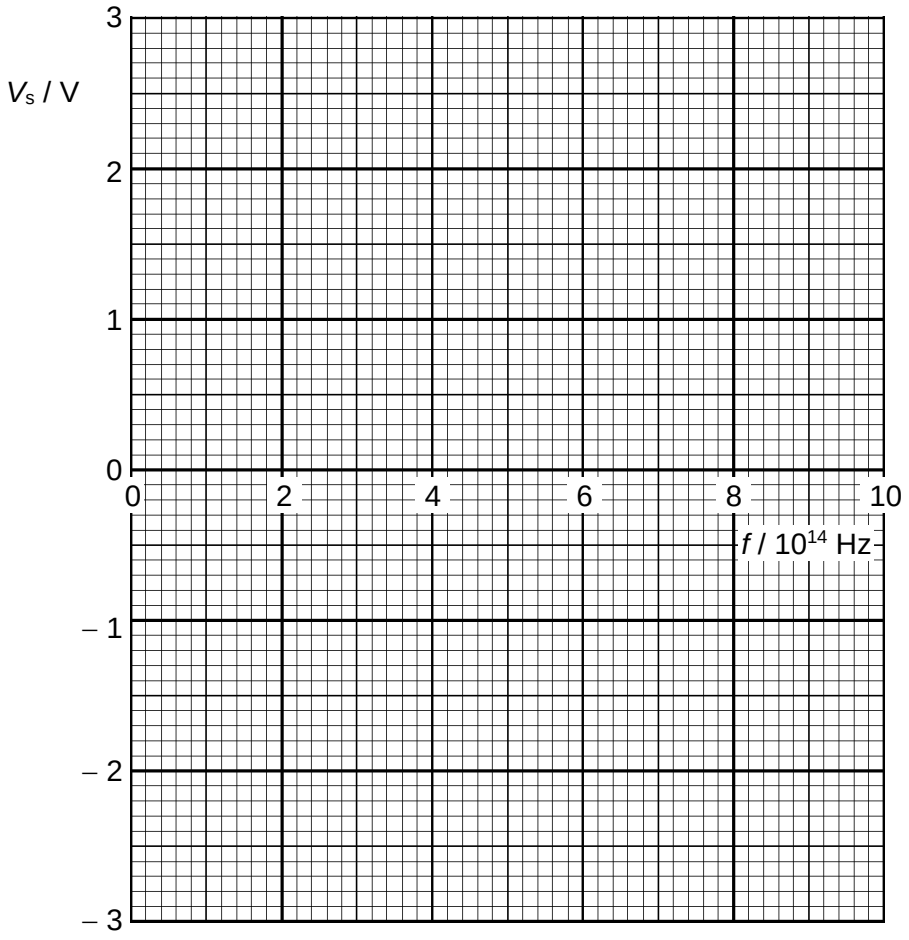

Fig. 5.1

[2]

(b) Fig. 5.2 shows an alternating supply, of frequency 25 Hz and rated at an output p.d. of 4.6 V, connected in series with an ideal diode and a resistor.

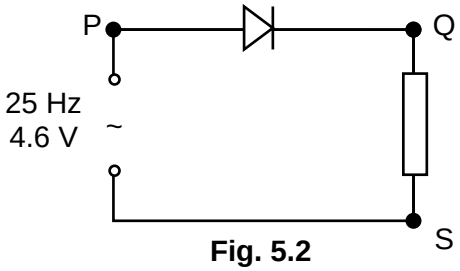

Fig. 5.2

(i) Calculate the maximum potential difference (p.d.) that is applied across the diode.

maximum p.d. = ... V [1]

(ii) The waveform seen on the screen of the c.r.o. when the Y-plates are connected across points QS is shown on Fig. 5.3.

On the same figure Fig. 5.3, sketch the waveform that is seen on the screen of the c.r.o. when the Y-plates are connected across PQ instead.

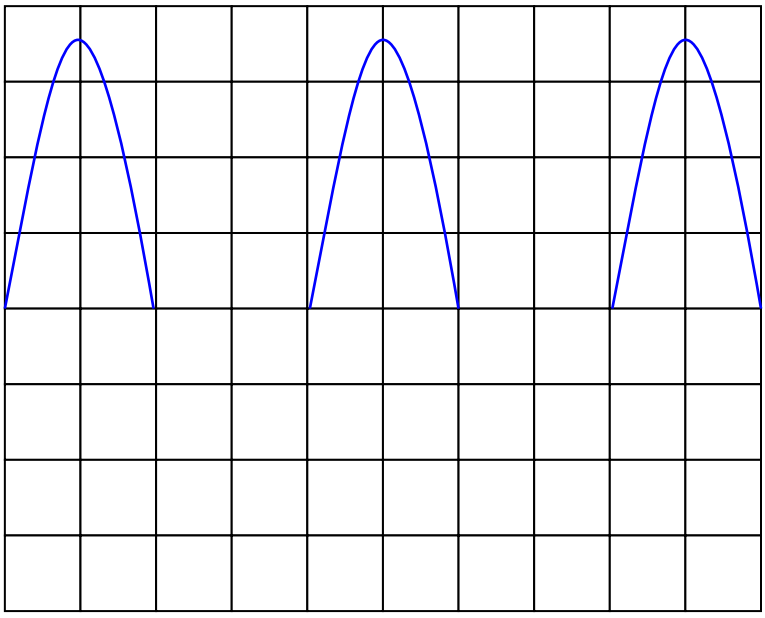

Fig. 5.3

[1]

[Total: 4]