

9 (a) Fig. 9.1 shows an absorption spectrum for chlorophyll *a* and the corresponding action spectrum for a species of plant.

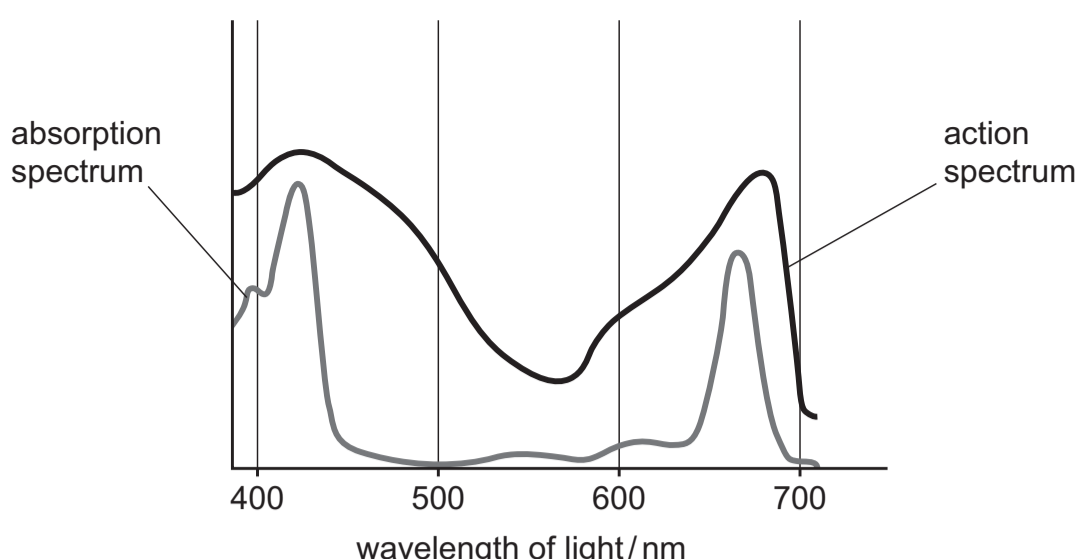


Fig. 9.1

(i) Explain what is meant by an absorption spectrum and an action spectrum.

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(ii) Suggest **and** explain why the curve shown in Fig. 9.1 for the absorption spectrum is different from the curve for the action spectrum for wavelengths of light between 450 nm and 550 nm.

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(b) Scientists investigated the effect of temperature on the rate of photosynthesis **and** the rate of respiration of the trailing azalea, *Kalmia procumbens*, at a high light intensity.

Fig. 9.2 shows the results of this investigation.

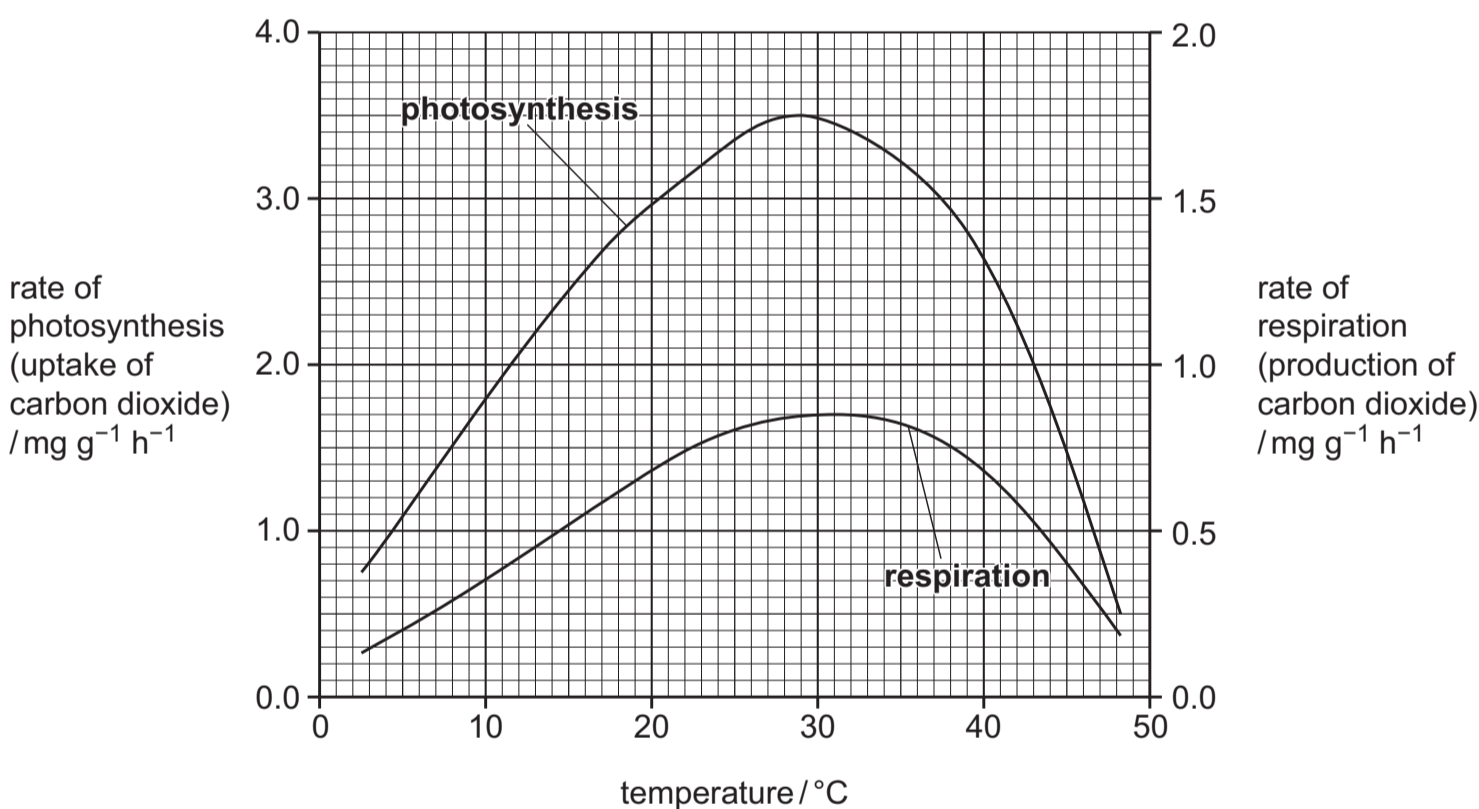


Fig. 9.2

(i) With reference to Fig. 9.2, describe **and** explain the effect of temperature on the rate of **photosynthesis** for *K. procumbens*.

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(ii) The rate of photosynthesis in this investigation was obtained by measuring the uptake of carbon dioxide from the atmosphere. It did **not** take into account the use of carbon dioxide produced by respiration.

Using Fig. 9.2, calculate the rate of photosynthesis at 20°C when the carbon dioxide produced by respiration is taken into account.

rate of photosynthesis [2]