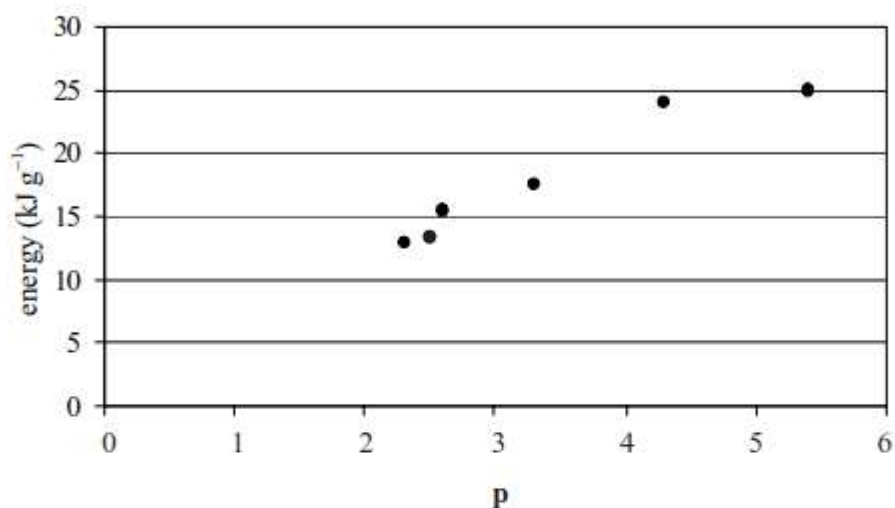# Graph Interpretation Practice Questions

1.

An experiment was performed to study the effect of the chemical structure of amino acids on their energy content. The energy released by the combustion of each amino acid was plotted against a value related to the combustible portion, **p**, of the amino acid. The results of the experiment are shown in the graph below:

The value of **p** for the amino acid proline is 4.7.
Use the graph above to determine the energy (kJ g⁻¹) of proline.

2.

The solubility of carbon dioxide in water varies with temperature, as shown in the graph below:
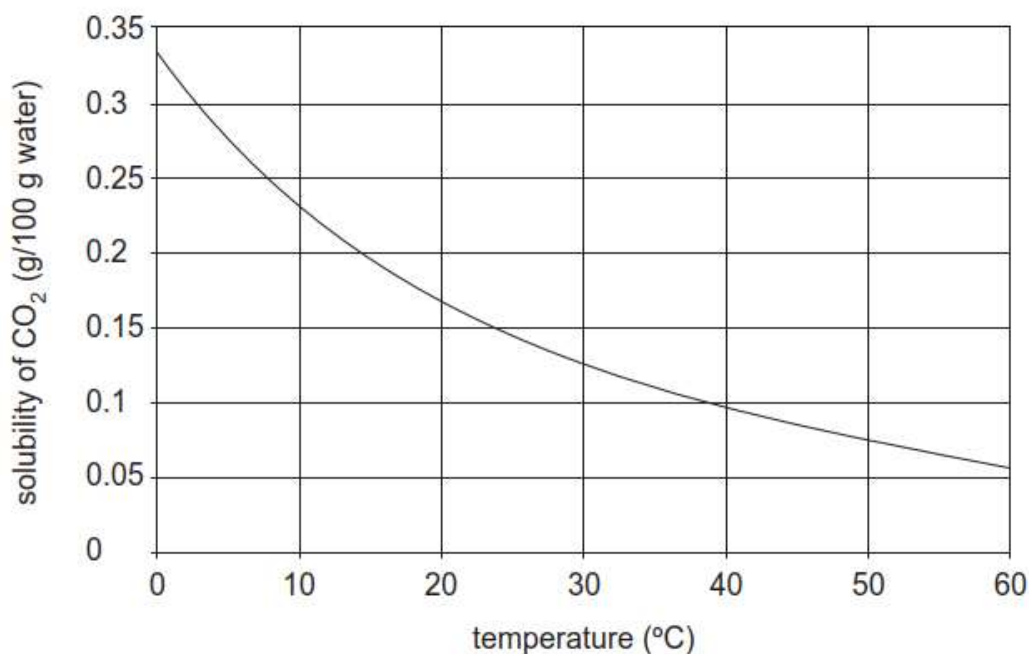
State the effect that increasing water temperature has on the solubility of CO_2.

3.

Water hardness affects the solubility of F⁻ in water. A scale used to define the degree of hardness of water is shown in the table below:

| Water Classification	Water Hardness (arbitrary units)
soft	0–17
slightly hard	18–60
moderately hard	61–120
hard	121–180
very hard	>180

The graph below shows the effect of water hardness on the percentage of added F⁻ that is soluble in the water:
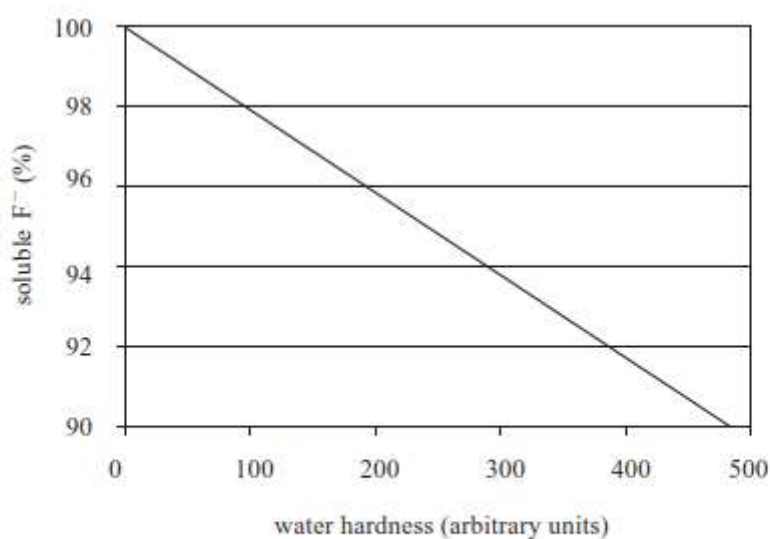
State a hypothesis that is supported by these results.

4.

Explain the effect that the number of moles of OH⁻ added has on the water absorbance of the polymer, as shown in the graph below:
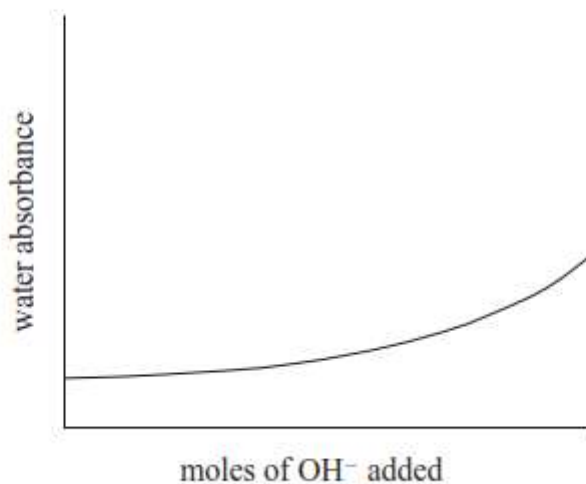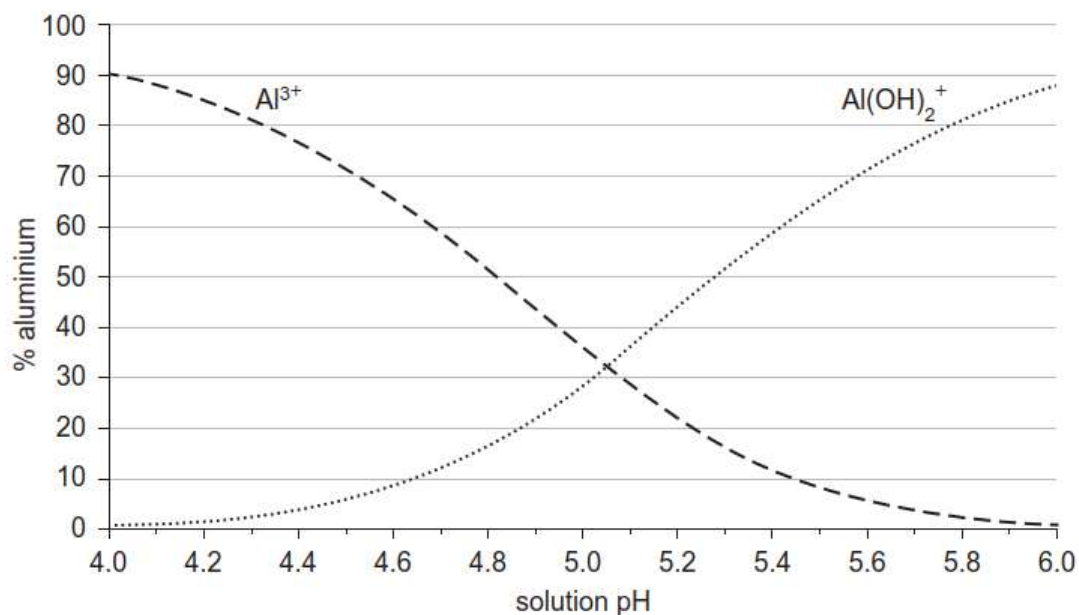
5.

The process of fermentation converts glucose into ethanol.

In an experiment, yeast was added to a solution of glucose and the rate of fermentation was measured at several different temperatures. The results were plotted on a graph, as shown in the diagram below:
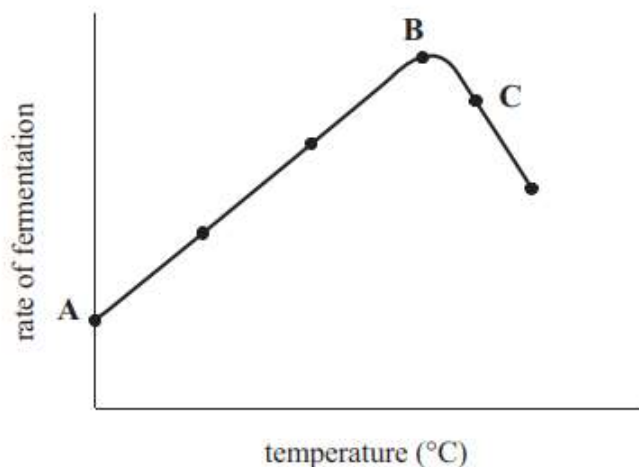
6.

The graph below shows the variation in the proportions of Al^{3+} and $Al(OH)_2^+$ over the pH range 4.0–6.0:

(i) State what happens to the percentage of aluminium present as $Al(OH)_2^+$ as pH increases from 4.0 to 6.0.

_____

_____

(ii) Using the graph above, determine the pH when 65% of the aluminium is present as Al^{3+}.

_____

7.

The percentage of AsO_4^{3-} remaining in drinking water over time, with visible light treatment and with UV light treatment, is shown in the graph below:
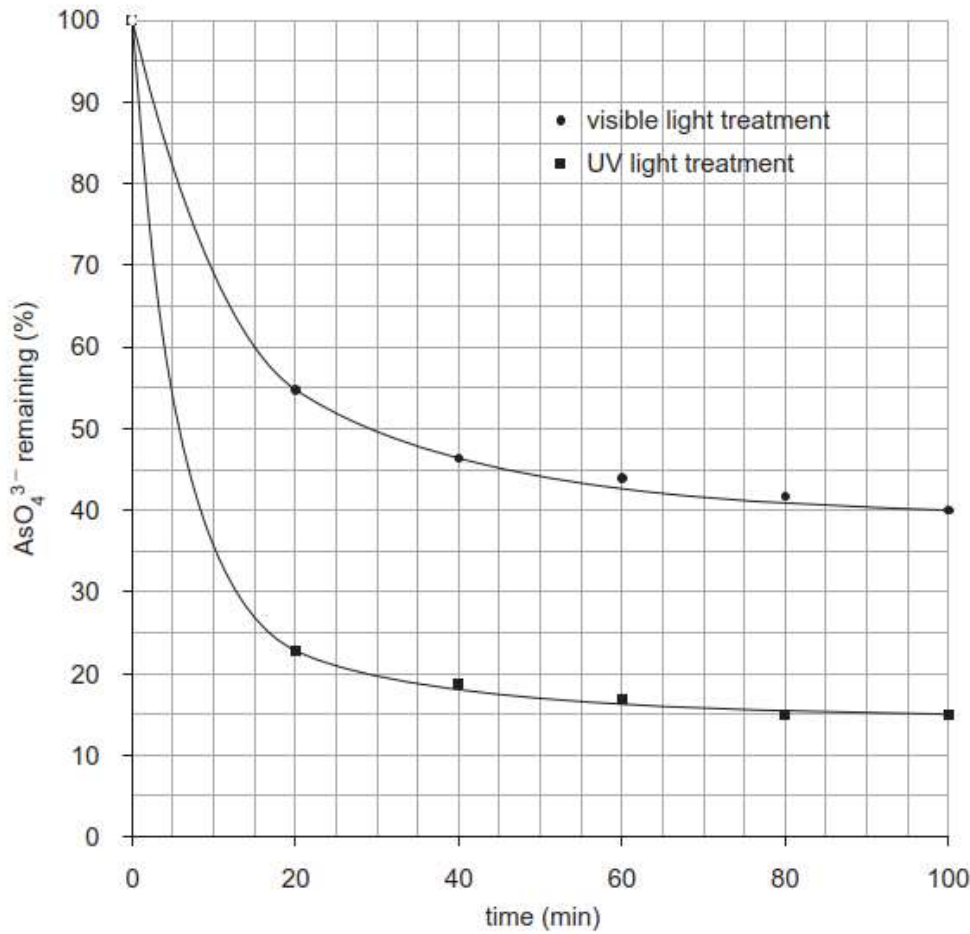
(1) Determine the percentage of AsO_4^{3-} removed with UV light treatment at 100 minutes.

_____

(2) Calculate the difference in the percentage of AsO_4^{3-} remaining at 100 minutes with visible light treatment and with UV light treatment.

8. The amount of carbon monoxide (CO) produced in an engine when methane is burnt in air varies with the amount of air available, as shown in the graph below:
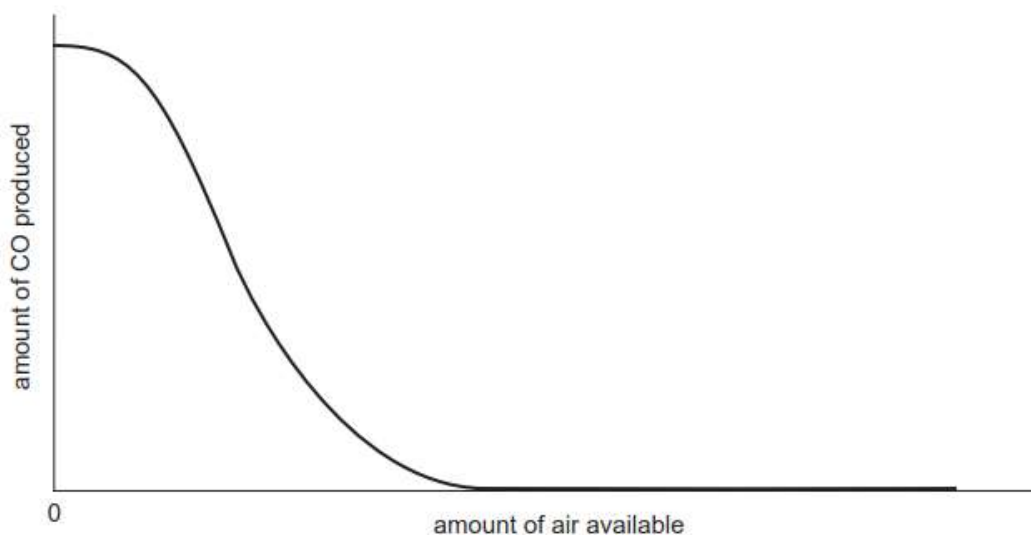
**9.** A compound called TAED is added to some oxygen bleaches to improve their bleaching performance.

The performance of one oxygen bleach at different temperatures, with and without TAED, is shown in the graph below:
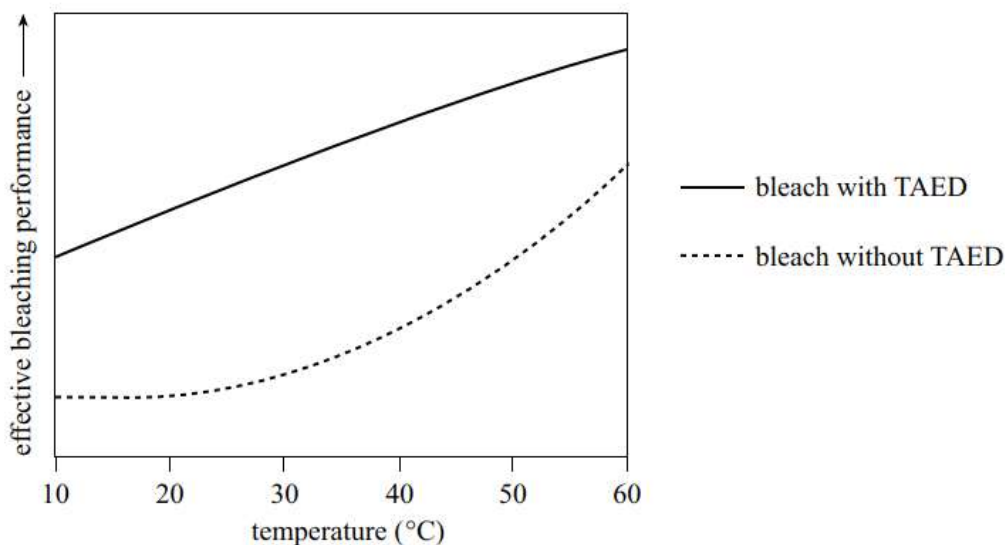
The addition of TAED to the oxygen bleach has economic advantages for the consumer.

Using the graph above, explain one economic advantage that adding TAED to the oxygen bleach has for the consumer.

10. NO, NO_2, and ozone are formed above a city street on a sunny day. The concentrations of NO and ozone are shown in the graph below:
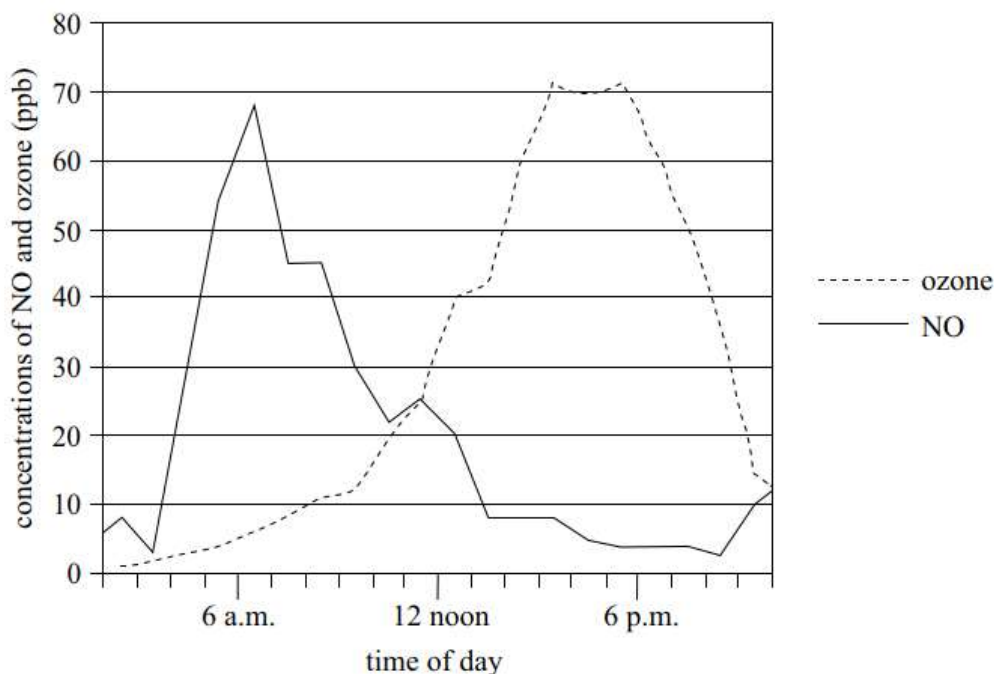
(i) When the concentration of ozone reaches 50 ppb its effect on living organisms can be observed.

    (1) Using the graph above, identify the earliest time of day at which the effect of ozone on living organisms is likely to be observed.