

Nitrogen and Compounds – 2019 June

1. 0620/32/M/J/19/No.8

(a) Oxides of nitrogen are pollutants in the air.

(i) One source of oxides of nitrogen in the air is from the manufacture of nitric acid.

State **one** other source of oxides of nitrogen in the air.

..... [1]

(ii) State **one** adverse effect of oxides of nitrogen on health.

..... [1]

(iii) Oxides of nitrogen act as catalysts.

What is meant by the term *catalyst*?

.....
..... [1]

(iv) Oxides of nitrogen are formed during the manufacture of nitric acid.

Which **one** of the pH values could be the pH of nitric acid?

Draw a circle around the correct answer.

pH 1 pH 7 pH 10 pH 14

[1]

(b) Nitrogen is present in fertilisers.

Why are fertilisers added to the soil where crops are grown?

.....
..... [1]

(c) The table shows some observations about the reactivity of four metals with dilute hydrochloric acid.

metal	reaction with hydrochloric acid
calcium	a rapid stream of bubbles is seen
lead	no bubbles are seen
manganese	a slow stream of bubbles is seen
tin	a few bubbles slowly form

Use the information in the table to put the **four** metals in order of their reactivity. Put the least reactive metal first.

least reactive $\xrightarrow{\hspace{15em}}$ most reactive

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[2]

(d) Calcium melts at 839°C and boils at 1484°C.

What is the physical state of calcium at 1600°C?

..... [1]

[Total: 8]

