Oxford Cambridge and RSA

GCSE Chemistry B (Twenty First Century Science)

J258/04 Depth in chemistry (Higher Tier)

Question Set 20

1. The table shows information about some transition elements.

Metal	Melting point (°C)	Colour of metal oxide	Common positive ions
mercury	–39	red	Hg_2^{2+} Hg^{2+}
vanadium	1910	orange-brown	V^{2+} V^{3+}
copper	1100	black or red	Cu^{+} Cu^{2+}
chromium	1900	dark green or black	Cr^{2+} Cr^{3+}
zinc	420	white	Zn^{2+}

(a) Which two statements about the melting points are true?

Tick (✓) **two** boxes.

The melting point of mercury is > room temperature (20 °C). ☐

The melting point of chromium ~ the melting point of vanadium. ☐

The melting point of copper >> the melting point of mercury. ☐

The melting point of chromium < the melting point of zinc. ☐

[2]

(b) Mercury and zinc are **not** typical transition metals.

Use information from the table to explain why.

[3]

(c) Copper can form **two** oxides with different formulae. In both formulae, the oxide ion is O^{2-}.

Write the formulae for the **two** oxides.

Use information from the table to help you.

[2]

(d) Chromium also forms an **oxyanion** with the formula CrO_4^{2-}.

Suggest why this ion is known as an **oxyanion**

[2]

(e) Which statement describes another correct property for transition metals?

Tick (✓) **one** box.

Transition metals make good catalysts. ☐

Transition metal oxides are usually gases. ☐

Transition metal compounds conduct electricity when solid. ☐

Transition metals are less dense than other metals. ☐

[1]

Total Marks for Question Set 20: 10

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