# National 5 Chemistry Snap Shot Progress Check 2

**1** An atom has 26 protons, 26 electrons and 30 neutrons.
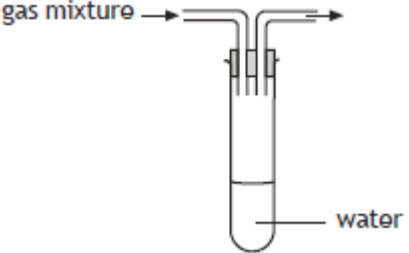The atom has:
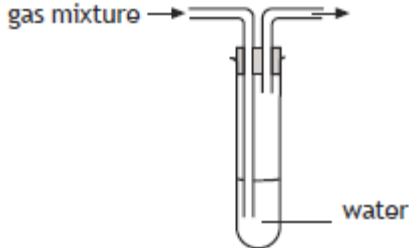**A** atomic number 26, mass number 56
**B** atomic number 56, mass number 30
**C** atomic number 30, mass number 26
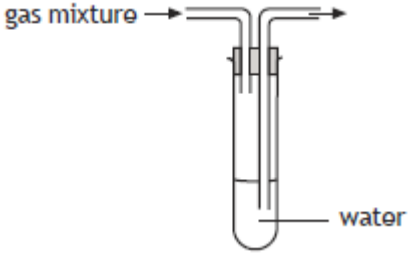**D** atomic number 52, mass number 56

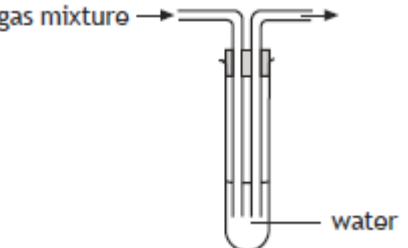**2** The purpose of the limestone in the blast furnace is:
**A** to provide the energy for the process
**B** to remove the impurities
**C** to reduce the iron ore to iron
**D** to oxidise the iron ore

**3** Which of the following diagrams shows the apparatus which would allow a soluble gas to be removed from a mixture of gases?



**4** Select the answer that shows the correct formula for iron(II)hydroxide.
**A** $FeOH_2$
**B** $Fe_2OH$
**C** $Fe(OH)_2$
**D** $Fe_2(OH)$

**5** Which of the following is not a member of a homologous series with general formula $C_nH_{2n}$?
**A** propane
**B** propene
**C** cyclobutane
**D** but-1-ene

**6**   0.25 mol of a gas has a metal oxide has a mass of 15.5g.
The metal oxide is:

**A**   $Na_2O$

**B**   $MgO$

**C**   $Al_2O_3$

**D**   $CuO$

**7**   The volume of $0.5moll^{-1}$ sodium hydroxide that would be neutralised by $20cm^3$ of $1.0moll^{-1}$ sulphuric acid is:

**A**   $80cm^3$

**B**   $40cm^3$

**C**   $10cm^3$

**D**   $20cm^3$

**8**   Which compound would not be an isomer of hexane?

**A**   1-methylpentane

**B**   2,3-dimethylbutane

**C**   2,2-dimethylbutane

**D**   2-methylpentane

**9**   $Fe_2O_3$ + $x$CO $\longrightarrow$ $y$Fe + $3CO_2$
This equation will be balanced when:

**A**   $x = 1$ and $y = 2$

**B**   $x = 2$ and $y = 2$

**C**   $x = 3$ and $y = 2$

**D**   $x = 2$ and $y = 3$

**10**  In the reaction between copper sulphate solution and zinc metal:

**A**   the copper ion is oxidised and the zinc metal reduced

**B**   the copper metal is oxidised and the zinc metal reduced

**C**   the copper metal is reduced and the zinc metal is oxidised

**D**   the copper ion is reduced and the zinc metal is oxidised

**11**  An acidic solution contains

**A**   only hydrogen ions

**B**   only hydroxide ions

**C**   more hydrogen ions than hydroxide ions

**D**   more hydroxide ions than hydrogen ions

**12** Which of the following oxides, when shaken with water would give an alkaline solution?

**A** calcium oxide

**B** nickel oxide

**C** nitrogen oxide

**D** sulphur dioxide

**13** Petrol is a mixture of hydrocarbons.
The tendency of a hydrocarbon to ignite spontaneously is measure by its octane number.

| | **Hydrocarbon** | **Octane Number** |
|---|---|---|
| 1 | 3-methylpentane | 74.5 |
| 2 | butane | 93.6 |
| 3 | pentane | 61.7 |
| 4 | 2-methylpentane | 73.4 |
| 5 | hexane | 24.8 |
| 6 | methylcyclopentane | 91.3 |

A student made the hypothesis that as the chain length of the hydrocarbon increases, the octane number decreases.
Which set of 3 hydrocarbons should have their octane numbers compared in order to test this hypothesis?

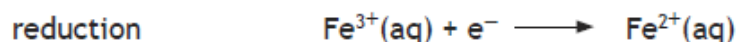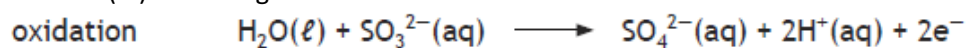**A** 1,4,6

**B** 1,2,4

**C** 2,3,5

**D** 3,4,5

**14** A reaction is endothermic if:

**A** energy is required to start the reaction

**B** heat is released during the reaction

**C** the temperature drops during the reaction

**D** the temperature rises during the reaction

**15** Which metal can be extracted from its ore by heat alone

**A** tin

**B** zinc

**C** lead

**D** silver

**16** The ion-electron equation for the oxidation and reduction steps in the reaction between sulphite ions and iron (III) ions are given below:

oxidation    $H_2O(\ell) + SO_3^{2-}(aq) \longrightarrow SO_4^{2-}(aq) + 2H^+(aq) + 2e^-$

reduction    $Fe^{3+}(aq) + e^- \longrightarrow Fe^{2+}(aq)$

The redox equation for the overall reaction is:

A    $H_2O(\ell) + SO_3^{2-}(aq) + Fe^{3+}(aq) \longrightarrow SO_4^{2-}(aq) + 2H^+(aq) + Fe^{2+}(aq) + e^-$

B    $H_2O(\ell) + SO_3^{2-}(aq) + 2Fe^{3+}(aq) \longrightarrow SO_4^{2-}(aq) + 2H^+(aq) + 2Fe^{2+}(aq)$

C    $SO_4^{2-}(aq) + 2H^+(aq) + Fe^{2+}(aq) + e^- \longrightarrow H_2O(\ell) + SO_3^{2-}(aq) + Fe^{3+}(aq)$

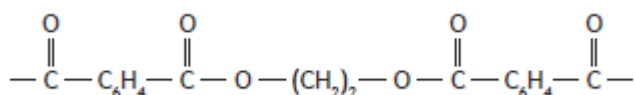D    $SO_4^{2-}(aq) + 2H^+(aq) + 2Fe^{2+}(aq) \longrightarrow H_2O(\ell) + SO_3^{2-}(aq) + 2Fe^{3+}(aq).$
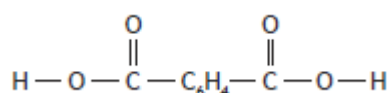
**17** The apparatus below was set up.
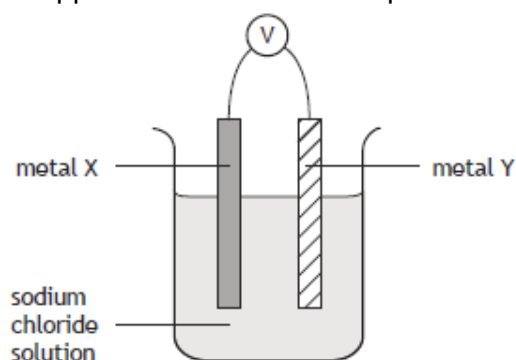


Which of the following pairs of metals would give the highest reading on the voltmeter?

| | Metal X | Metal Y |
|---|---|---|
| A | iron | zinc |
| B | magnesium | silver |
| C | zinc | silver |
| D | zinc | copper |

**18** A section of a condensation polymer is shown below:



One of the monomers is:



The structural formula for the other monomer is:

A   

C   

B   

D