Chapter Summary Worksheet

Chapter 16
Green chemistry

Print out and complete this worksheet to generate a summary for Chapter 16.

1 Which energy source has the *lowest* carbon footprint?

- ☐ **A** biodiesel
- ☐ **B** bioethanol
- ☐ **C** hydrogen
- ☐ **D** hydroelectric power

2 Which is the main disadvantage of hydrogen as a fuel for a motor vehicle?

- ☐ **A** It cannot be liquefied at room temperature.
- ☐ **B** It is highly flammable.
- ☐ **C** It has an energy density of $0.143\,kJ\,kg^{-1}$.
- ☐ **D** It produces water when burnt.

3 Which fuel produces the least carbon dioxide per kJ?

- ☐ **A** methane
- ☐ **B** butane
- ☐ **C** octane (petrol)
- ☐ **D** coal

4 Bioethanol is **not** made from

- ☐ **A** starch
- ☐ **B** sugar
- ☐ **C** vegetable oils
- ☐ **D** glucose

5 Which is **not** a true statement about the fuel 2,5-dimethylfuran, DMF?

- ☐ **A** It is insoluble in water.
- ☐ **B** It has a higher energy density than bioethanol.
- ☐ **C** It is made from fructose.
- ☐ **D** It can be made from algae.

6 Iron is manufactured in a blast furnace by the reaction:

$$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$$

The atom economy of this reaction is

- ☐ **A** 18%
- ☐ **B** 40%
- ☐ **C** 80%
- ☐ **D** 100%

7 Which polymer is **not** biodegradable?

- ☐ **A** silk
- ☐ **B** Biopol
- ☐ **C** cellulose
- ☐ **D** poly(propene)

8 Which substance reacts with solar radiation to produce ozone?

- ☐ **A** oxygen
- ☐ **B** nitric oxide
- ☐ **C** CFC-12
- ☐ **D** HCFC-22

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