

- 1 (a) (i) complete combustion / combustion in excess oxygen [1]
of fuels containing carbon / fossil fuels / hydrocarbon (fuels) [1]
produce carbon dioxide / increase percentage of CO₂ in atmosphere [1]
- (ii) living things / cells / plants / animals / humans / micro-organisms [1]
(oxidise / react with) oxygen **and** food / foodstuff / named foodstuff / carbohydrate /
sugar / glucose [1]
produces carbon dioxide [1]
- (b) glucose **or** starch **or** carbohydrate [1]
oxygen [1]
- (ii) light / sunlight / sun / UV [1]
chlorophyll **accept:** chloroplast [1]
- 2 (a) (i) (waste gases) from animals [1]
decaying vegetation / anaerobic decay [1]
accept: decomposition of organic material / natural gas
- (ii) carbon dioxide [1]
water [1]
- (b) photosynthesis removes carbon dioxide from the atmosphere [1]
both respiration and combustion produce carbon dioxide [1]
any **two** of the following: [2]
plants photosynthesis changes carbon dioxide into carbohydrates
(burning) of fossil fuels / named fuel / petrol / alkanes
respiration by living organisms to obtain energy from
carbon-containing compounds
comment that the balance between these processes determines the percentage of carbon
dioxide

- 3 (i) methane / water vapour / oxides of nitrogen / hydrofluorocarbons / perfluorocarbons / ozone [1]
not sulfur dioxide
- (ii) living organisms / plants and animals / cells [1]
produce energy (from food / glucose / carbohydrates) [1]
 this forms carbon dioxide (could be in an equation) [1]
- (iii) when growing the crop removed carbon dioxide from atmosphere [1]
 / crop photosynthesised and used carbon dioxide
 combustion returned the carbon dioxide [1]
- (iv) increased combustion [1]
 of fossil fuels / named fossil fuel [1]
- or** deforestation [1]
 less photosynthesis [1]
not greater population [1]

[Total: 8]

- 4 (a) (i) contains carbon, hydrogen and oxygen [1]
 accept example
 ratio 2H : 1O [1]
not contains water
ignore comments about carbon
- (ii) living organism / plants and animals / cells [1]
obtain energy from food [1]
not burn negates energy mark
- (iii) carbohydrates contain oxygen [1]
- (iv) as a fertiliser / manure [1]
- (b) 80 cm³ of oxygen therefore 40 cm³ of methane [1]
 $40/60 \times 100 = 66.7\%$ [1]
accept 66% and 67%
no ecf
- (ii) add sodium hydroxide(aq) / alkali [1]
 carbon dioxide dissolves, leaving methane [1]

[Total: 10]