

AQA Chemistry GCSE

Required Practical 8 - Water Purification Mark Scheme

Q1. filtration or by passing through filter beds to remove solids (1)

sterilisation to kill microbes

allow chlorine / ozone allow ultraviolet light

(1)

(b) water needs more / different processes

(1)

because it contains any two from:

- more organic matter
- more microbes
- toxic chemicals or detergents

(2)

(c) (as part of glassware attached to bung)

salt solution in (conical) flask

allow suitable alternative equipment, eg boiling tube

(1)

(at end of delivery tube)

pure water in test tube which must not be sealed

allow suitable alternative equipment, eg, beaker, condenser

(1)

heat source (to heat container holding salt solution)

(1)

if no other mark obtained allow for 1 mark suitable equipment

drawn as part of glassware attached to bung and at end of delivery tube

(d) determine boiling point

(1)

should be at a fixed temperature 100°C

allow should be 100°C

allow if impure will boil at a temperature over 100°C

(1)

Q2

(a) white to blue

accept colourless to blue

1

Q3.

(a) endothermic (reaction)

accept thermal decomposition

1

(b) gives out heat (energy)

accept exothermic (reaction)

1

turns blue

accept goes to hydrated copper sulphate

1

[3]

Q4.

(i) Filtration

1

(ii) Chlorine

1

Q5.

(a) (i) Solids

1

(ii) Chlorine

1

(iii) improves dental health **or** reduces tooth decay

1

(b) put a sample of the filtered water in an evaporating basin **or** leave to evaporate

accept any description of evaporation (using a Bunsen or leaving on the windowsill)

1

there will be crystals of salt left

1

- (c) sodium and / or chloride ions are bigger than water (molecules) **or** ions are charged
or molecules are not charged

*do **not** accept sodium chloride molecules as ions is given in the question*

1

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Q6

- (a) contains (large amounts of) dissolved solids / difficult to remove dissolved solids

allow salty / too much salt

allow sea water makes you thirsty / vomit

allow polluted / untreated / contaminated

1

- (b) filtered: removes solids / removes insoluble material / dirt

ignore large objects

1

chlorine: kills/destroy bacteria/microbes/ germs etc

*allow disinfect / sterilise **or** gets rid of bacteria*

ignore purify / clean

1

[3]

Q7

- (a) filter

1

to remove solids **or** insoluble particles

OR

add coagulant (1)

flocculation / settling / remove solids (1)

1

(add) chlorine
accept ozone / UV 1

to reduce the number of microbes
accept to kill microbes / bacteria / germs
accept sterilise
allow disinfect
ignore remove microbes 1

(b) (i) ion exchange resin
allow ion exchange column
allow sodium ions / Na⁺
allow hydrogen ions / H⁺ 1

(ii) prevent growth of microbes
accept sterilise
accept to kill microbes / bacteria / germs
accept to reduce the number of microbes
ignore remove microbes 1

(c) high cost of energy / heating
allow uses a lot of energy 1

(d) any **one** from:
• helps to develop / maintain bones
allow any suitable positive effect on bones
• helps to develop / maintain teeth
allow any suitable positive effect on teeth
• reduces heart disease 1

[8]