

Metals - Mark scheme

1. (a) (an alloy) that can return to its original shape (after being deformed/bent / twisted) 1
accept (on heating / cooling) it returns to its shape
- (b) any **two** from:
- brass / it is a mixture
accept brass / it is not pure
 - zinc changes structure / disrupts patterns or layers
 - copper metal atoms / layers able to slide over each other 2
accept zinc prevents atoms / layers sliding over each other
- (c) (i) oxygen / O₂ / O 1
- (ii) lead remains (in furnace) because of its high boiling point 1
zinc boils / evaporates (out of furnace) because of its low boiling point 1
*if neither mark awarded then allow 1 mark for different boiling points
ignore references to melting points*
- [6]
2. (a) (i) **Quality of Written Communication**
The answer to this question requires ideas in good English in a sensible order with correct use of scientific terms. Quality of written communication should be considered in crediting points in the mark scheme.
maximum 2 marks if ideas not expressed well
- layers / lattice / giant structure / regular pattern of atoms (diagram) 1
*allow layers / lattice / giant structure / regular pattern of ions
do **not** accept particles*
- outer (shell) electrons 1
accept valence electrons
- (free to) move (through whole structure) 1
accept delocalised / mobile / free
- (ii) the free electrons (allow the metal to conduct electricity) 1
accept electrons move / mobile / delocalised
- (iii) atoms / ions / layers can slide / slip / move over each other 1
- (b) (i) copper oxide formed **or** Cu reacts with oxygen **or** Cu is oxidised 1
this is a poor conductor **or** gets in the way of free moving electrons 1
or fewer mobile electrons
*do **not** accept electricity*
- or** oxygen atoms / oxygen molecules / oxide ions in metal (1)
do not accept oxygen pockets / bubbles
- prevents / disrupts flow of electrons /current or fewer mobile electrons (1) (1)
*do **not** accept macro explanations; do **not** accept electricity*
- (ii) hydrogen reacts with oxygen or water is formed **or** 1
hydrogen reduces copper oxide etc.

[8]