GCSE MARKING SCHEME

JANUARY 2016

ADDITIONAL APPLIED SCIENCE
FOUNDATION TIER
4791/01

INTRODUCTION

This marking scheme was used by WJEC for the 2016 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

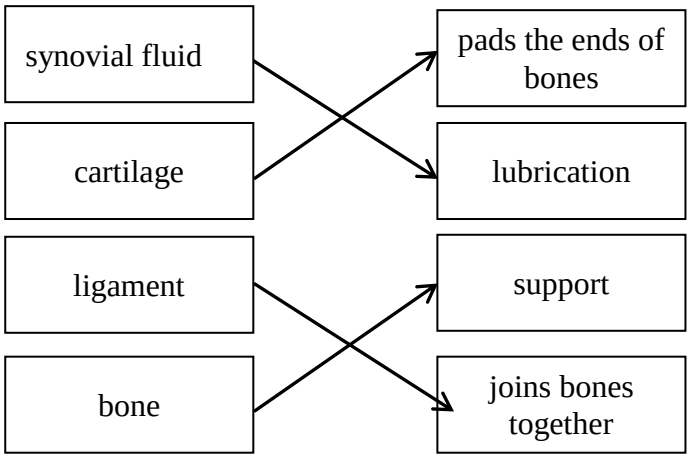
It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCSE ADDITIONAL APPLIED SCIENCE FOUNDATION TIER

JANUARY 2016 MARK SCHEME

<table>
<tr><th>Question</th><th>Marking point</th><th>Marks</th></tr>
<tr><td>1 (a) (i)</td><td>All plots correct (2); 5 correct (1); 4 or less correct (0)
Ignore 0,0
line (1)</td><td>3</td></tr>
<tr><td>(ii)</td><td>3 (cm) (ecf)</td><td>1</td></tr>
<tr><td>(iii)</td><td>any correct data pair in any order (e.g. 2.5/3) (ecf) (1)
0.83 (N/cm) (1)</td><td>2</td></tr>
<tr><td>(b) (i)</td><td>2 (cm^3)</td><td>1</td></tr>
<tr><td>(ii)</td><td>12.2 (g)</td><td>1</td></tr>
<tr><td>(iii)</td><td>Subs 12.2 /2 (1) (allow ecf)
answer = 6.1 g/cm^3 (1)</td><td>2</td></tr>
<tr><td>2 (a) (i)</td><td>1 mark for each correct line
<table><tr><th>Salt 1</th><th>Soluble?
Yes/no</th><th>Salt 2</th><th>Soluble?
Yes/no</th><th>Example of a precipitation reaction
Yes / No</th><th>Insoluble salt produced
Yes / No</th></tr><tr><td>sodium nitrate</td><td>yes</td><td>barium sulfate</td><td>NO</td><td>no</td><td>no</td></tr><tr><td>sodium sulfate</td><td>YES</td><td>lead nitrate</td><td>Yes</td><td>yes</td><td>yes</td></tr><tr><td>potassium nitrate</td><td>yes</td><td>sodium carbonate</td><td>Yes</td><td>No</td><td>NO</td></tr><tr><td>lead bromide</td><td>no</td><td>barium hydroxide</td><td>no</td><td>NO</td><td>NO</td></tr></table></td><td>4</td></tr>
<tr><td>(ii)</td><td>silver (1) nitrate + sodium chloride(1) → silver chloride + sodium nitrate (1)</td><td>3</td></tr>
<tr><td>(b) (i)</td><td>$CuSO_4$</td><td>1</td></tr>
<tr><td>(ii)</td><td>1 mark for each correct response
<table><tr><th>Element</th><th>Relative atomic mas</th><th>Number of atoms in $Cu(OH)_2$</th><th>Total mass</th></tr><tr><td>hydrogen</td><td>1</td><td>2</td><td>2</td></tr><tr><td>copper</td><td>64</td><td>1</td><td>64</td></tr><tr><td>oxygen</td><td>16</td><td>2</td><td>32 (ecf)</td></tr><tr><td colspan="3">Relative formula mass =</td><td>98 (ecf)</td></tr></table></td><td>4</td></tr>
<tr><td>(iii)</td><td>98 (g)
Allow ecf</td><td>1</td></tr>
</table>

Question	Marking point	Marks
3 (i)	one correct [1] two or three correct [2] all correct [3] **Part of the joint** — **Function**  	3
(ii)	Any two of: Damage to or loss of cartilage / (osteo)arthritis / bones rub together. Synovial membrane becomes damaged / fluid leaks from joint. Ligaments become stretched / strain.	2
4 (i)	titration	1
(ii)	flame test	1
(iii)	paper chromatography	1
(iv)	limewater	1
5 (i)	Any three of: refrigeration, freezing, heating, drying, salting, smoking, pickling, canning	3
(ii)	produce toxins / poisons	1
6 (a) (i)	LHS – chloroplast cytoplasm RHS – vacuole, nucleus	
(ii)	I support II nucleus	1
	III control movement of substances in and out (of cell)	1
(b) (i)	chlorophyll	1
	water (1) glucose (1) + oxygen (1)	3

Question	Marking point	Marks
7 (a) (i)	**C**	1
(ii)	**D**	1
(iii)	**B**	1
(iv)	any blood vessel carrying blood to the heart	1
(b) (i)	60 (kg)	1
(ii)	No (1) because not pattern / trend (1) *The second point can be awarded for coherently and correctly linking the points*	2
(c)	**Indicative content:** Before training: • the resting heart rate is greater • maximum heart rate during exercise is greater • recovery time is longer A training programme: • strengthens heart muscle • making it more efficient / increased cardiac output per beat **Mark Bands** **5-6 marks** The candidate constructs an articulate, integrated account correctly linking relevant points such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar. **3-4 marks** The candidate constructs an account correctly linking some relevant points such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar. **1-2 marks** The candidate makes some relevant points such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar. **0 marks** The candidate does not make any attempt or give a relevant answer worthy of credit.	6