PATHWAYS MARKING SCHEME

LEVEL 1 / 2 AWARD IN APPLIED SCIENCE

SUMMER 2014

INTRODUCTION

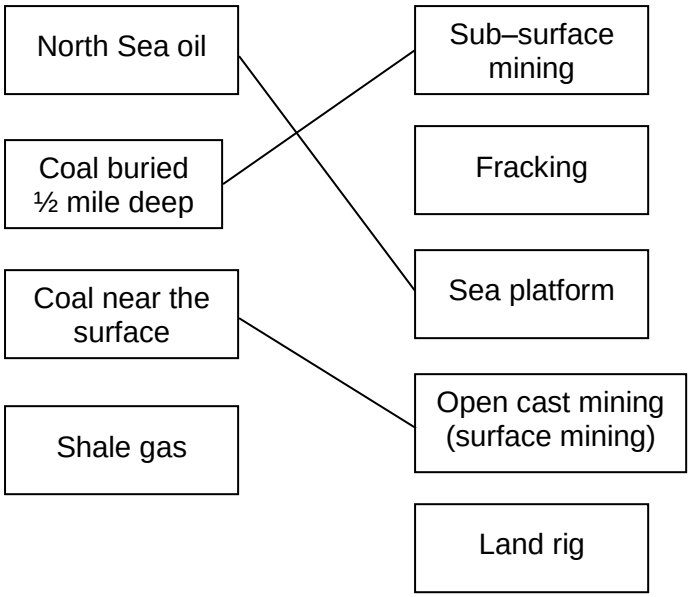
The marking schemes which follow were those used by WJEC for the Summer 2014 examination in LEVEL 1 / 2 AWARD IN APPLIED SCIENCE. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were 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 conferences was to ensure that the marking schemes were 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' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

LEVEL 1 and 2 AWARD IN APPLIED SCIENCE

Summer 2014 Mark Scheme

Question	Answer	Marks
1. (a)	**Resource** **Extraction Method**  Shale gas line to fracking is given in question and should be ignored when marking. All 3 correct (3) 2 correct (2) 1 correct (1)	3
(b) (i)	Large reserves/large amount of oil/sea access (Not accepted: easy to get)	1
(ii)	Environmental impact/named example (e.g. destroys animals/wildlife)	1
(c)	**B**, **D**, **C**, **A / B**, **D**, **A**, **C** (2) If **B is** correct (1)	2
(d) (i)	**A** (above gasoline) **F** (below fuel oil)	1 1
(ii)	Smaller molecules	1

Question	Answer	Marks
2 (a)	Corrosive	1
(b)	1 mark RHS correct formula (HCl) 1 mark LHS correct formulae (CO_2,H_2O)(NOT accepted: CO^2,H^2O) 1 mark for correct balancing	3
(c) (i)	Correct plot (2) Half square tolerance Best fit curve (1)	3
(ii)	47 cm^3 (accept answer between 45 and 49) (Allow ecf if graph incorrectly plotted)	1
(iii)	1. Rate is fast at start / lots of CO_2 given off at start (1) Rate slows down / CO_2 levels off/less gas given as time goes on (1)	2
	Rate is faster at beginning (1) than end	1
	2. HCl/$CaCO_3$ is used up / HCl concentration goes down	
(iv)	Any **two** of: Increase temperature, increase concentration of HCl, crush small chips, increase surface re of chips (Not accepted: use different acid)	2
3 (a) (i)	Direction of attack/focus on prey / parallax/binocular vision/increase chance of catching prey/ can locate prey (Not just: 'can see prey')	1
(ii)	Increase field of vision / increase view / see all around them / see all/most angles	1
(iii)	Detect colour/rapid light/colour changes	1
(b)	Any **four** of: • ciliary muscles relax • suspensory ligaments stretched • lens flattens or thinner/gets longer (Not: gets bigger) • focus light on retina • image sent to brain via optic nerve	4
(c) (i)	Photoreceptors/rods and cones/retina Electrical Brain	3
(ii)	Light rays change direction (1) when they pass between two different substances/water and air (1)	2
(d) (i)	One complete wavelength labelled	1
(ii)	Any **two** of: • slower wave • smaller wavelength / waves get closer together • larger amplitude / wave is higher • bend / change direction	2

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>4 (a) (i)</td><td>One mark for each correct answer.
<table><tr><th></th><th>1</th><th>2</th><th>3</th></tr><tr><td>before adding the herbicide</td><td>12</td><td>13</td><td>12</td></tr><tr><td>two weeks after adding herbicide</td><td>6</td><td>13</td><td>3</td></tr><tr><td>percentage change (%)</td><td>50%</td><td>0%</td><td>75%</td></tr></table></td><td>3</td></tr>
<tr><td></td><td>(ii)</td><td>I – Herbicide C (Allow ecf from table %)
II – Kills more weeds/ less weeds left</td><td>1
1</td></tr>
<tr><td></td><td>(iii)</td><td>12 x 50 (1) = 600 (1)</td><td>2</td></tr>
<tr><td></td><td>(b)</td><td>One mark for each point:
• some of the weeds have mutated/a mutation has occurred
• this is a change in gene/change in proteins produced
• this gives protection against herbicide
• gives an advantage to weed/weed not affected by herbicide grows
• resistant weeds more likely to reproduce</td><td>5</td></tr>
<tr><td>5 (a) (i)</td><td></td><td>Leighton is diabetic (1) since blood sugar levels are uncontrolled/varies/ go up and down a lot (Allow: it goes higher) (1)</td><td>2</td></tr>
<tr><td></td><td>(ii)</td><td>Ate some carbohydrate/breakfast/food</td><td>1</td></tr>
<tr><td></td><td>(b)</td><td>Any three of:
• blood sugar – cause insulin to be released
• pancreas releases/produces insulin
• insulin affects target organs (liver)
• liver takes up sugar/stores sugar as glycogen
• blood sugar decreases</td><td>3</td></tr>
<tr><td></td><td>(c)</td><td>Type 1 – body does not produce enough insulin
Type 2 – body cells do not respond to insulin</td><td>2</td></tr>
<tr><td></td><td>(d)</td><td>Any two of:
Insulin, carbohydrate source/biscuits/sugary drink, blood sugar monitor, insulin delivery system</td><td>2</td></tr>
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