Mark scheme

Biological molecules

Biology 0610 · Questions from Paper 1, Paper 2, Paper 3 and Paper 6

Total marks

36

MARKS FOR EACH QUESTION

1	2	3	4	5	6	7	8	9	10	Total
1	1	1	1	1	1	1	7	11	11	**36**

Question 1 **[1]**

Answer C

Question 2 **[1]**

Answer B

Question 3 **[1]**

Answer A

Question 4 **[1]**

Answer C

Question 5 **[1]**

Answer B

Question 6 **[1]**

Answer B

Question 7 **[1]**

Answer B

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Question 8 [7]

8	carbon ; oxygen ; nitrogen ; carbohydrate ; glycogen ; starch ; cellulose ;	**7**	carbon and oxygen in either order

Question 9 [11]

9 (a)	Benedict's reagent / solution / test; heat / boil; *safety feature:* goggles / water bath / tongs; *correct colour change:* blue to green / yellow / orange / red;	[4]	**A** Bendicts / Benedicks **A** Fehlings / copper sulphate and sodium hydroxide **I** copper sulphate alone **I** warm / burn **A** hair tied back / gloves / lab coat **A** turquoise for blue **R** if omit blue Mark each point independently
(b)	blue to purple / mauve / lilac / violet;;	[1]	**R** blue to purple black Need starting colour and end colour for the mark
(c) (i)	*conclusion* – acid damages / reacts with / denatures the albumen ;	[1]	**R** restating the results
(ii)	control / comparison / to maintain volume in test tube;	[1]	**I** makes solution neutral / to see the effect of the acid
(d)	cloudy / white solid / milky / white (emulsion) ;	[1]	**A** turbid / turpid
(e)	*variable to change:* concentration / strength of acid / pH of acid; *variable to measure: rate /* speed of change (to cloudy) / amount of white solid / degree of cloudiness ; *variable to control:* volume or amount of albumen / temperature;	[3]	**I** pH unqualified / volume or amount of acid / type of acid **A** suitable changes to albumen **I** colour change **A** same type of albumen / same egg / type of egg **I** volume of acid
		[Total: 11]	

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Question 10 [11]

10 (a) (i)

One visible from;
Skin / peel / outer wall / shell;
outer layer darker than inside;
side buds / spots / 'eyes' present;
inner tissue – similar colour;

[1]

I. differences in composition – starch / storage.

(ii)

feature	sweet potato	irish potato
inner tissue	spotted / speckled	no spots, uniform;
skin / peel / wall	darker thicker	lighter; thinner;
shape of ends	pointed / slanted (both ends)	rounded (both ends) ;
overall shape	long / narrow	short / round / more circular / oval;
margin	two layers visible not smooth / uneven	one layer; smooth;
section shape	circular /rounded smaller	oval; larger;
stalk / root *	absent	present;

[max 2]

Any **two** differences.
Comments should match and accept one difference per printed row on the question paper.
Both spaces on mark scheme for 2 differences can refer to the same feature e.g. skin or margin.

Look for comparative terms … '-er'.

* scar or hairs at the base.

(b)

1. *starch*
equal sample size of each potato; ONCE
iodine <u>solution</u> / iodine in KI / iodine reagent;
same concentration / volume of iodine solution;
expected colour change; (yellow / orange / red brown to blue / blue black / purple)
compare colour change; (how fast / darker) (using colorimeters)

Safety – **one** from:
Tie back hair / tie; ONCE
Safety goggles / spectacles; ONCE
Lab coat; ONCE

[max 3]

A. drops of iodine if stated number of drops but ignore vague references such as few or several.
'same volume of iodine solution' = 2.
I. using ethanol.
Need original and final colours for expected change.

2. equal samples – same volume of water / same preparation / grinding; ONCE
Benedict's reagent;
same volume / amount of Benedict's solution;
heating;
expected colour change; (blue → green / orange / red)
compare colours; (intensity of colour – or timing of colour change) (use of colorimeters)

Safety – **one** from:
water bath;
test-tube holders;
same as above

[max 5]
[8 marks]

A. chemical components / Fehling's / Clinistix. (pink → dark blue)
Not just warm but heat – maybe used a boiling water bath = 2 marks.
Need original and final colours for expected change.
I. repeats.

If describe biuret ignore description of test but allow safety point.

[Total: 11]

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