

# Mark Scheme (Results)

## November 2009

IGCSE

### IGCSE Science (Double Award) (4437) Paper 1F

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Question Number	Answer	Mark
1	(a) A;	1
	(b) A;	1
	(c) B;	1
	(d) C;	1
	(e) C;	1
	(f) A;	1
	(g) A;	1
		(7)

(Total 7 marks)

Question Number	Answer	Mark												
2(a)	<table border="1"> <thead> <tr> <th>sentence</th> <th>number</th> </tr> </thead> <tbody> <tr> <td>The number of organisms is</td> <td>(8)</td> </tr> <tr> <td>The number of plants is</td> <td>2;</td> </tr> <tr> <td>The number of animals is</td> <td>6;</td> </tr> <tr> <td>The number of primary consumers is</td> <td>2;</td> </tr> <tr> <td>The number of food chains is</td> <td>5;</td> </tr> </tbody> </table>	sentence	number	The number of organisms is	(8)	The number of plants is	2;	The number of animals is	6;	The number of primary consumers is	2;	The number of food chains is	5;	(4)
	sentence	number												
	The number of organisms is	(8)												
	The number of plants is	2;												
	The number of animals is	6;												
	The number of primary consumers is	2;												
The number of food chains is	5;													

Question Number	Answer	Mark
2(b)	decrease / eq; no food / less grasshoppers / need to compete / eq;	(2)

Question Number	Answer	Mark
2(c)	(make) food / energy / photosynthesis / eq;	(1)

(Total 7 marks)

Question Number	Answer	Mark
3(a)(i)	2600 (cm <sup>3</sup> ) ;	(1)

Question Number	Answer	Mark
3(a)(ii)	urine /eq;	(1)

Question Number	Answer	Mark
3(a)(iii)	200 (cm <sup>3</sup> ) ;	(1)

Question Number	Answer	Mark
3(a)(iv)	cool / lose heat / maintain/control/regulate body temp. / eq;	(1)

Question Number	Answer	Mark
3(a)(v)	kidney;	(1)

Question Number	Answer	Mark
3(b)	carbon dioxide / energy / ATP;	(1)

Question Number	Answer	Mark
3(c)	body temperature; glucose; carbon dioxide; salt / eq; pH;                    1 oxygen / urea / blood pressure	Max 2 (2)

(Total 8 marks)

Question Number	Answer	Mark												
4(a)	<table border="1"> <thead> <tr> <th>event</th> <th>part</th> </tr> </thead> <tbody> <tr> <td>digestion of protein by stomach enzyme</td> <td>(B)</td> </tr> <tr> <td>swallowing</td> <td>A;</td> </tr> <tr> <td>absorption by villi in small intestine</td> <td>C;</td> </tr> <tr> <td>release of hydrochloric acid</td> <td>B;</td> </tr> <tr> <td>egestion</td> <td>D;</td> </tr> </tbody> </table>	event	part	digestion of protein by stomach enzyme	(B)	swallowing	A;	absorption by villi in small intestine	C;	release of hydrochloric acid	B;	egestion	D;	(4)
	event	part												
	digestion of protein by stomach enzyme	(B)												
	swallowing	A;												
	absorption by villi in small intestine	C;												
	release of hydrochloric acid	B;												
egestion	D;													

Question Number	Answer	Mark
4(b)	amino acids;	(1)

(Total 5 marks)

Question Number	Answer	Mark
5(a)(i)	yeast;	(1)

Question Number	Answer	Mark
5(a)(ii)	carbon dioxide;	(1)

Question Number	Answer	Mark
5(a)(iii)	allow gas out / eq; keep microorganisms out / keep oxygen out / eq;	(2)

Question Number	Answer	Mark
5(b)	rise / eq; level / fall / eq;	(2)

(Total 6 marks)

Question Number	Answer	Mark												
6(a)	<table border="1"> <thead> <tr> <th>event</th> <th>stage letter</th> </tr> </thead> <tbody> <tr> <td>udder cells are removed and cultured</td> <td>(A)</td> </tr> <tr> <td>an embryo is put into a surrogate mother</td> <td>E;</td> </tr> <tr> <td>a nucleus is removed from an unfertilised egg</td> <td>C;</td> </tr> <tr> <td>an udder cell nucleus is put into an empty egg cell</td> <td>D;</td> </tr> <tr> <td>an electric spark is used</td> <td>B;</td> </tr> </tbody> </table>	event	stage letter	udder cells are removed and cultured	(A)	an embryo is put into a surrogate mother	E;	a nucleus is removed from an unfertilised egg	C;	an udder cell nucleus is put into an empty egg cell	D;	an electric spark is used	B;	(4)
event	stage letter													
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a nucleus is removed from an unfertilised egg	C;													
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an electric spark is used	B;													

Question Number	Answer	Mark
6(b)	three;	(1)

Question Number	Answer	Mark
6(c)	genetically / gene / allele / DNA / eq identical / same / exact copy / eq;	(2)

(Total 7 marks)

Question Number	Answer	Mark
7(a)(i)	haemoglobin;	(1)

Question Number	Answer	Mark
7(a)(ii)	biconcave / biconcave described; more surface / large SA:VOL / eq; diffusion; I thin/permeable/small/lack nucleus	(2)

Question Number	Answer	Mark
7(b)(i)	shape of cell; Accept wavy outline cell membrane; cytoplasm; nucleus; Accept any nucleus not ball shaped	(3)

Question Number	Answer	Mark
7(b)(ii)	ingest / ingestion described / engulf / eq; digest / enzymes / breakdown / eq;	(2)

(Total 8 marks)



Question Number	Answer	Mark
8(a)	A rib(s) / ribcage; B diaphragm; C spine / disc / vertebra;	(3)

Question Number	Answer	Mark
8(b)	contracts; moves down / flattens / eq;	(2)

Question Number	Answer	Mark
8(c)	surface area (of alveoli) reduced / smaller alveoli; less oxygen (into blood/body); ↓ gas exchange respiration; less aerobic (respiration) / anaerobic respiration / lactic acid; less energy released;	(3)

(Total 8 marks)

Question Number	Answer	Mark
9(a)	arrow labelled P to nucleus;	(1)

Question Number	Answer	Mark
9(b)	arrow labelled Q to cell membrane;	(1)

Question Number	Answer	Mark
9(c)(i)	osmosis;	(1)

Question Number	Answer	Mark
9(c)(ii)	against concentration gradient / more ions inside than outside / eq; energy / ATP;	(2)

Question Number	Answer	Mark
9(c)(iii)	chlorophyll; amino acids / enzymes / protein / DNA / nucleic acid / eq;	(2)

(Total 7 marks)

Question Number	Answer	Mark
10(a)(i)	starch / cellulose / glucose / sucrose / protein / amino acids / fat / carbohydrate / eq; I cell wall	(2)

Question Number	Answer	Mark
10(a)(ii)	respiration; decomposition / decay / rotting / eq; combustion / burning;	Max (2)

Question Number	Answer	Mark
10(b)	dissolves; water / cloud; acid (rain); harms/kills organisms; I harm to humans	Max (3)

(Total 7 marks)

Question Number	Answer	Mark
11	named crop; control light / light bulbs / eq; control carbon dioxide / burning / eq; control temperature heating / eq; control water supply /eq; control humidity / mineral ions / pest; photosynthesis; growth for longer time / growth in cold season;	max (5)

(Total 5 marks)

PAPER TOTAL: 75 MARKS

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