

Mark Scheme (Results)

Summer 2013

International GCSE  
Human Biology (4HB0) Paper 02

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Question number	Answer	Accept	Reject	Marks
1 (a)	A = ovary B = uterus/womb; C = vagina;		wall cervix	3
(b)	no ovum/egg present; released in middle of cycle/not yet released/released later/ovum still in ovary;  endometrium/womb <u>lining</u> thinner; (during menstruation/period) removed/ breaks down/shed;		deteriorated	4
(c)	fertilise/penetrate/fuse with ovum;  may die;  swims up uterus/fallopian tube /oviduct/swim to ovum/pass out of vagina/finds egg already fertilised;  stopped by contraceptive device;			3 Max
(d) (i)	infertile/sterile;  obstruction prevents sperm and ovum meeting/ovum cannot enter fallopian tube;			2
(ii)	use condom/avoid sexual intercourse;  prevents mixing of body fluids;  which transfer disease/prevents bacteria from entering;		protected sex safe sex	2 max
			<b>Total</b>	<b>14</b>

Question number	Answer	Accept	Reject	Marks
2 (a)	Any three from: water bath; (stop)clock/timer/watch; test tube holder/rack/tongs; safety goggles; pipette; thermometer; measuring cylinder; balance;		Clamp/Stand tube	3 max
(b) (i)	volume/mass/amount of egg white;		how much	1
(ii)	different volume will take longer to react;	R.A.		1

Question number	Answer	Accept	Reject	Marks																					
2 (c)	<table border="1"> <thead> <tr> <th>Test Tube</th> <th>Treatment</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td><b>A</b></td> <td><i>nothing added not boiled</i></td> <td><i>slightly clear</i></td> </tr> <tr> <td><b>B</b></td> <td>HCl added not boiled</td> <td>clear;</td> </tr> <tr> <td><b>C</b></td> <td>NaOH added not boiled</td> <td>cloudy/no change;</td> </tr> <tr> <td><b>D</b></td> <td>HCl added boiled</td> <td>cloudy/no change;</td> </tr> <tr> <td><b>E</b></td> <td>NaOH added boiled</td> <td>cloudy/no change;</td> </tr> <tr> <td><b>F</b></td> <td>nothing added boiled</td> <td>cloudy/no change;</td> </tr> </tbody> </table>	Test Tube	Treatment	Result	<b>A</b>	<i>nothing added not boiled</i>	<i>slightly clear</i>	<b>B</b>	HCl added not boiled	clear;	<b>C</b>	NaOH added not boiled	cloudy/no change;	<b>D</b>	HCl added boiled	cloudy/no change;	<b>E</b>	NaOH added boiled	cloudy/no change;	<b>F</b>	nothing added boiled	cloudy/no change;			5
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(d)	<p>destroyed/denatured by heat;</p> <p>more active/works better/low pH in acid conditions/less active in alkaline conditions/high pH;</p> <p>digests protein/egg white;</p>		kills or dies	2 max																					
			<b>Total</b>	<b>12</b>																					



Question number	Answer	Accept	Reject	Marks
4 (a)	sugar solution raised; distilled water lower;			2
(b)	water molecules pass through membrane/into sugar solution by <u>osmosis</u> ;  increased volume of sugar solution;  decreased volume of distilled water;		makes solution more dilute	2 max
(c)	sugar molecules unable/too big to pass through membrane;  allows movement of water between cells;  ensures conc. of contents remains constant;	Appropriate examples e.g. kidney reabsorption		2
			<b>Total</b>	<b>6</b>

Question number	Answer	Accept	Reject	Marks
5 (a) (i)	<p>(sudden) change in an allele/bases/code/mistake during replication;</p> <p>leads to production of different phenotype/protein/characteristic;</p>			2
(ii)	<p>enzymes/pancreatic juice can't pass into duodenum/small intestine;</p> <p>ineffective/less digestion/nutrients into body;</p>		reference to insulin or any other hormones	2
(b) (i)	<p>(parents) Ff Ff;</p> <p>(gametes) F f F f;</p> <p>(fertilisation) FF            Ff            Ff</p> <p>ff;                            normal normal/carrier</p> <p>normal/carrier cystic fibrosis;</p>	sufferer		4
(ii)	<p>50%/1:1/1 in 2/half;</p> <p>3:1/3 in 4/75%/three quarters;</p>			2
			<b>Total</b>	<b>10</b>







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