



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
			Total	14

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>A</td> <td><i>nothing added not boiled</i></td> <td><i>slightly clear</i></td> </tr> <tr> <td>B</td> <td>HCl added not boiled</td> <td>clear;</td> </tr> <tr> <td>C</td> <td>NaOH added not boiled</td> <td>cloudy/no change;</td> </tr> <tr> <td>D</td> <td>HCl added boiled</td> <td>cloudy/no change;</td> </tr> <tr> <td>E</td> <td>NaOH added boiled</td> <td>cloudy/no change;</td> </tr> <tr> <td>F</td> <td>nothing added boiled</td> <td>cloudy/no change;</td> </tr> </tbody> </table>	Test Tube	Treatment	Result	A	<i>nothing added not boiled</i>	<i>slightly clear</i>	B	HCl added not boiled	clear;	C	NaOH added not boiled	cloudy/no change;	D	HCl added boiled	cloudy/no change;	E	NaOH added boiled	cloudy/no change;	F	nothing added boiled	cloudy/no change;			5
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F	nothing added boiled	cloudy/no change;																							
(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																					
			Total	12																					

Question number	Answer	Accept	Reject	Marks
3	use of drugs/medication; kills worms in body; kill snails; by use of predators/biological control; eg crayfish; or chemicals/pesticides; improve sanitation; drain swamps/ponds/lakes; prevents faeces/urine entering water; prevents worms eggs from infecting other snails; health education/warn of dangers of entering water/do not bathe; cover up skin if entering water/do not walk barefoot;	named predators if correct	antibiotics Insecticides disinfectant antiseptic	8
			Total	8

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
			Total	6

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

Question number	Answer	Accept	Reject	Marks
6 (a) (i)	hinge;			1
(ii)	ball and socket;		ball joint pivot joint	1
(b)	A/biceps contracts; <u>forearm</u> moves/pulls up/raises; B/triceps stretched; B/triceps contracts; <u>forearm</u> moves/pulls down/straightens; antagonistic/description;	<u>forearm</u> flexes <u>forearm</u> extends		4 max
(c)	no/reduced cartilage; normally covers end of bone; smooth; reduces friction; shock absorber/cushions; bones will rub/grind together;		any reference to fluid	4 max
			Total	10
			Total For Paper	60

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