

# Mark Scheme (Results)

June 2011

International GCSE

Human Biology (4HB0)  
Paper 01

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

**INTERNATIONAL GCSE HUMAN BIOLOGY 4HB0/01 – SUMMER 2011**

<b>Question number</b>	<b>Answer</b>	<b>Marks</b>
1 (a)	A;	<b>1</b>
(b)	B;	<b>1</b>
(c)	D;	<b>1</b>
(d)	A;	<b>1</b>
(e)	B;	<b>1</b>
(f)	C;	<b>1</b>
(g)	B;	<b>1</b>
(h)	A;	<b>1</b>
(i)	B;	<b>1</b>
(j)	D;	<b>1</b>

**Total 10 Marks**

<b>Question number</b>	<b>Answer</b>	<b>Marks</b>
2 (a) (i)	Iodine;	<b>1</b>
(ii)	Benedict's	<b>1</b>
(iii)	Alcohol;	<b>1</b>
(iv)	Biuret;	<b>1</b>
(b)	Starch blue/black; yellow/orange; Glucose brick red or orange/yellow; blue; Protein lilac; blue;	<b>6</b>
(c)	Two from: Carbohydrates/Hydrogen/Oxygen;;  C/H/O - two for one mark	<b>2</b>

**Total 12 Marks**

Question number	Answer	Marks
3 (a) (i)	A iris; B lens; C cornea; D Retina;	<b>4</b>
(b)	A;	<b>1</b>
(c)	B and C;	<b>1</b>
(d)	Correct line to optic nerve;	<b>1</b>

**Total 7 Marks**

Question number	Answer	Marks
4 (a)	Two from: Enlargement of breasts; Pubic hair; Widening of hips/pelvis; Start of menstruation/release of ovum;	<b>2</b>
(b) (i)	Line remains high;	<b>1</b>
(ii)	LH / Luteinising hormone;	<b>1</b>
(c)	Fertilisation; Zygote; <u>Mitosis</u> ; Embryo; Accept fetus	<b>4</b>

**Total 8 Marks**

Question number	Answer	Marks
5 (a)	A diaphragm; B bronchus;	<b>2</b>
(b)	Three from: (External) intercostal muscles <u>contract</u> ; Internal intercostal muscles <u>relax</u> ; Ribs move up/out; Volume of thorax increases/pressure in the lungs decreases;	<b>3</b>
(c)	Tidal volume the volume of air exchanged during ..... Vital capacity the maximum volume of air ..... Breathing rate the number of breaths taken in one minute  Three correct two marks One or two correct one mark	<b>2</b>
(d)	Spirometer;	<b>1</b>

**Total 8 Marks**

Question number	Answer	Marks
6 (a) (i)	Guideline to stomach	<b>1</b>
(ii)	Protein	<b>1</b>
(b)	Amylase/carbohydrase; Amino acids; Lipids/fats;	<b>3</b>
(c)	Potatoes; Rice;	<b>2</b>
(d)	Prevention of bowel cancer/constipation; Moves waste quickly through the large intestine/stimulates peristalsis/idea of adding bulk to the faeces;	<b>2</b>

**Total 9 Marks**

Question number	Answer	Marks
7 (a)	humerus; scapula/shoulder blade; reject shoulder bone	<b>2</b>
(b)	Axial - E; Appendicular – A, B; 2 correct 1 mark, 1 correct no mark	<b>2</b>
(c)	Attachment of muscles; Allow movement of (upper) arm/Idea of 360 degree movement;	<b>2</b>

**Total 6 Marks**

Question number	Answer	Marks
8 (a) (i)	Sheep in the middle; Arrows pointing to the organism doing the eating;	<b>2</b>
(ii)	Sheep;	<b>1</b>
(iii)	Lost as heat; Respiration/excretion/movement;  Or  Not all digested; Energy lost in faeces;  or  Award one mark for not all eaten;	<b>2</b>
(b)	Four from: Eutrophication; Excessive algae growth/algal bloom; Algae die; Microorganisms/bacteria; Respire/respiration; Idea of oxygen depletion; Fish die/suffocate;	<b>4</b>

**Total 9 Marks**

Question number	Answer	Marks
9 (a)	Two from: phenotype/characteristic; Hidden/not expressed; when heterozygous;  Accept reverse argument	<b>2</b>
(b)	Under age of 1, number dying has fallen; From age 1 – 14, number dying has not changed much or has fallen slightly; eq Over the age of 15, number dying has not changed much or has risen slightly; eq Reference to the fact that many more (still) die under the age of 1/use of quantitative data in answer;	<b>4</b>
(c) (i) (ii)	Antibiotic/ any named example; Three from: Reference to mucus being thicker/sticker; Idea of less oxygen into the body; Reduced (aerobic) respiration; Reference to not enough energy;	<b>1</b> <b>3</b>

**Total 10 Marks**

Question number	Answer	Marks
10 (a)	Diffusion movement is from a high to a low concentration  Osmosis involves the movement of water  Active transport molecules move against a concentration gradient  All three correct 2 marks One/two correct 1 mark	<b>2</b>
(b) (i)	Increase; Then decrease;	<b>2</b>
(ii)	Three from: Mention of an optimum pH/peak; Rate of reaction falls at other pHs; Bonds hold substrate and enzyme together; Changes in pH can break these bonds/denaturation; Change of shape of active site;	<b>3</b>
(iii)	ATP is made; From ADP + phosphate;	<b>2</b>

**Total 9 Marks**



Question number	Answer	Marks
11 (a)	(i) A RNA/genetic material/DNA/nucleic acid; B capsomere/capsid/protein (coat);	<b>2</b>
	(ii) Inside (living) cells/organism/host;	<b>1</b>
(b)	(i) Increases; Further detail such as rapidly from 2000 - 2001/slowly down/falls from 2007 - 2008;	<b>2</b>
	(ii) Vaccine contains dead/attenuated virus/antigens; Stimulates antibody production;	<b>2</b>
	(iii) Antigens; Change/mutation;	<b>2</b>

**Total 9 Marks**

Question number	Answer	Marks
12 (a)	(i) Evaporation; Removes heat;	<b>2</b>
	(ii) Vasodilation/dilation of (skin) arterioles; More blood through skin capillaries; Removes heat from blood; or Hairs lie flat; Therefore no layer of insulating air;	<b>2</b>
(b)	Two from : Acts on kidney/collecting duct; Changes permeability of tubules; Causes more water to be absorbed;	<b>2</b>
(c)	Keeping constant/maintaining; Conditions/internal state of the body;	<b>2</b>
(d)	C exercise/no exercise or varying degrees of exercise; O same age/gender/fitness; R Idea of repetition; M1 way of measuring of sweat e.g. weight of paper with sweat; M2 reference to time; S same exercise/temperature eq.;	<b>4</b>

**Total 12 Marks**

Question number	Answer	Marks
13 (a)	Artery takes blood away from the heart; Higher pressure;  Or converse for veins	<b>2</b>
(b)	Five from: O is universal donor; Contains no antigens; Donor A/person with blood group A contains A antigen; Donor A/person with blood group A contains b antibody; Donor B/person with blood group B contains B antigen; This would react with b antibody in person with blood group A; Agglutination occurs;	<b>5</b>
(c)	Four from: Surrounds cells; Carries food/oxygen to cells; from capillaries/blood; formed from plasma/under high pressure; Carries carbon dioxide/(nitrogenous) waste from cells; to lymph vessel/lymphatic system; referred to as lymph;	<b>4</b>

**Total 11 Marks**

**PAPER TOTAL = 120 MARKS**



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