

Mark Scheme (Results) January 2010

GCE O

GCE O Human Biology (7042) Paper 01



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	Question Number		Answer	Reject	Mark
1	(a)	(i)	causes a decrease;		1
		(ii)	heat breaks it down; cell membrane destroyed/broken down; water soluble; diffuses/ leached into water;	denatures falls boils away	2 max
	(b)		iodine solution/KI in iodine; blue-black colouration;		2 max
	(c)	(i)	more energy in chips; ORA approx 3 X/989 vs 331kJ; more fat / more carbohydrate; 9g vs 0g / 37.3 vs 17.7; add to obesity/less chance of losing weight;		max 3
		(ii)	thin chips have a larger surface area; more fat coated on the surface /absorbed by chips; more energy fat taken into body; add to fat store in body/reduces use of body fat;		
			accept reverse		max 3
	(d)		salivary amylase; converts starch to maltose;		2

Question Number 2	Answer					Mark 1 mark per row
Feat	ure	Red blood	Phagocyte	Lymphocyte	Platelet	Plasma
		cell				
Contains		✓;				
haemoglobin						
Has a			✓	√;		
nucleus						
Fluid consistin	g					✓;
mostly of wate	r					
Engulfs			✓;			
pathogens						
Produces				√;		
antibodies					_	
Involved in		√			✓	✓;
blood clotting						

Question	Number		Answer	Reject	Mark
3	(a)		high (increases) blood pressure; in glomerulus; forces out substances/ultra filtration; ref small molecules filtered; large molecules/named molecules retained;		2 max
	(b)	(i)	reabsorbed; 100%/ all; by proximal / convoluted tubule;		2 max
		(ii)	molecules (too) large; cannot / to pass through capillary walls / not passed out of blood / not filtered; no protein in filtrate /		
			none passed into urine;		3
	(c)	(i)	liver;		1
		(ii)	water reabsorbed; urea not reabsorbed;		
			increases percentage in urine;		2 max

Question Number			Answer	Reject	Mark
4	(a)	(i)	4 litres / dm ³ ;		1
		(ii)	smoking damages lungs / emphysema / eq;		1
	(b)		4000 x <u>10</u> ; . 100		
			400 <u>cm</u> ³ / 0.4 <u>litres</u> / dm ³ ;		2
	(c)		more exercise requires more energy; requires more oxygen; increases capacity to take in more air / oxygen; prevents anaerobic respiration / allows aerobic respiration to continue;		
			build up of lactic acid/ ORA		3 max
	(d)		warmer; moister; more carbon dioxide;		
			less oxygen;		3 max

Question Number			Answer	Reject	Mark
5	(a)		A = testis; B = sperm duct / vas deferens; C = prostate;		3
	(b)	(i)	bladder;		1
		(ii)	store urine; releases / expels urine from body /sphincter relaxes; by contraction;		2 max
	(c)		male carries both urine and sperm/semen/female only urine/ eq	smaller /	
			male longer;	bigger	2
	(d)	(i)	line marked T to testis;		1
		(ii)	promotes sperm production; any secondary sexual characteristic		2
	(e)		adds fluid; for sperms to swim; adds nutrients to sperm; alkaline/neutralises acidity of vaginal		
			fluid/acid;		2

Question Number			Answer	Reject	Mark
6	(a)		taste <u>and</u> smell; taste;		2
	(b)	(i) (ii)	individuals vary; improves reliability; REJECT improves accuracy rogue result may be obtained with just one; as with student D; allows calculation of mean /average; more accurate with taste and smell; sight not very important/not necessary to identify		3 max
			food; students differ in ability to identify;		3 max
	(c)		touch;		1

Questio Number		Answer	Reject	Mark
7 (a	1)	rapid; Involuntary/ automatic; no conscious brain involvement; protective;		3 max
(k) (i)	label line to white matter; label line to grey matter;		2
	(ii)	sensory neurone with cell body; relay neurone; motor neurone; synapses in grey matter;		4
(0	:)	nerve impulse is active process; requires energy / ATP; supplied by mitochondria;		2 max
(0	i)	iris reflex; closes pupil; reduces light entering the eye / prevents damage to retina;		
		OR		
		blink reflex; eyelid closes; preventing physical damage / reduces light;		2 max

	estion mber		Answer	Reject	Mark
8	(a)	(i)	sudden / spontaneous/ random change; change in DNA / bases / gene / allele / chromsome; wrong protein / amino acid formed / codes for different protein; different function;		2 max
		(ii)	X rays; uv light; ionising radiation; chemicals in tar / named example;	chemicals smoking	2 max
	(b)		parents Aa x Aa; gametes A a A a; fertilisation AA Aa Aa aa (normal) (normal) albino; 25% / 1 in 4 / 1:3;		5
	(c)		sunburn / uv light penetrates; damage to cells; skin cancer;		
			internal reflection of light; blurred vision; damage to retina;		4 max

	estion nber		Answer	Reject	Mark
9	(a)		virus;		1
	(b)	(i)	one and a half years;		1
		(ii)	antibody level falls; below safe level; can catch disease; booster increases antibody level remains above unsafe level; person is resistant/immune/ won't get disease;		3 max
	(c)	(i)	get booster dose/ vaccination; antibody levels fallen to unsafe / would make more antibodies;		2
		(ii)	droplets; water; faeces; flies;		2 max
	(d)	(i)	weakened / dead / attenuated organisms; toxins;		2
		(ii)	active; artificial;		2

(Total 13 marks) (Total for Paper: 100 marks)

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