

# edexcel

## Mark Scheme (Results)

### Summer 2012

International GCSE Human Biology (4HB0) Paper 02



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Question number	Answer	Notes	Marks
1 (a) (i)	A = myelin sheath; B = dendrites; C = cell body/cytoplasm; D = node of Ranvier;		4
(ii)	motor;		1
(iii)	arrow pointing away from cell body;		1
(iv)	sensory; relay/intermediate;		2
(b)	protective; fast; Involuntary/automatic/not controlled by brain;		2 max

#### **INTERNATIONAL GCSE HUMAN BIOLOGY PAPER 02 – SUMMER 2012**

Total 10 marks

Question number			Answer	Notes	Marks
2	(a)	(i)	only small numbers of bacteria taken in; need to multiply/reproduce; time taken for bacteria/food to pass along gut;		2 max
		(ii)	bacteria produce toxins; affect gut (lining); make it permeable to fluids/loss of fluids from blood;		2 max
	(b)	(i)	hands covered in bacteria/washing removes bacteria; can't be transferred to food;		2
		(ii)	bacterial reproduction slowed; less bacteria to cause food poisoning/enzymes/chemical reactions slower;	Reject stopped	2
		(iii)	meat can contain bacteria; if stored higher blood/juices/liquid could drip onto/contaminate other food;		2

Total 10 marks

Question number		Answer	Notes	Marks
3 (a)	(i)	start as a single bacterium; multiply/divide many times/large number produced; by mitosis/binary fission;		
		feed on nutrients/agar;		2 max
	(ii)	if not sterile would contain bacteria; these would affect result/bacteria enters from outside;		2
	(iii)	distribute milk evenly/spread milk;		1
	(iv)	prevents lid from coming off/stops other bacteria entering;		1
	(v)	too many colonies otherwise/stop colonies merging/so colonies can be counted;	must be reference to colonies.	1
(b)	(i)	dish 1 = 24; dish 2 = 25;		
		dish 4 = 26;		3
	(ii)	mean figure for dish is 25; dilution is 200/2 x 200; 25 x 200 =5000;		3
	(iii)	can't tell/count how many colonies present; couldn't determine (original) numbers of bacteria that produce colonies;	Accept OWTTE	2

Total 15 marks

	Question number		Answer	Notes	Marks
4	(a)	(a) supplies blood/oxygen/nutrients to heart <u>muscle;</u>			1
	(b)	(i)	cholesterol/fat /lipid/triglyceride;		1
		(ii)	high (blood) cholesterol/ <u>saturated</u> fat levels; high blood pressure; lack of exercise; overweight; smoking; stress; hereditary factors;		2 max
		(iii)	blood flow slows/stops in vessel; less/no oxygen/glucose to heart muscle; heart <u>muscle</u> dies/stops functioning; heart attack;		3 max

Total 7 marks

	Question number		Answer	Notes	Marks
5	(a)	(i)	no readings between pH 3.25 and 4.3; rate may go up after 3,25; so optimum would be higher;		3
		(ii)	stomach; low pH/acidic/HCl present/ enzyme has low optimum pH;		2
	(b)		denatured; as high pH breaks bonds; changes shape of active site; substrate unable to enter active site/form enzyme-substrate complexes;		2 3 max

### Total 8 marks

Question number			Answer				Accept	Marks
6	(a)	(i)	Mother I <sup>A</sup> I <sup>O</sup> Ch	ild I <sup>o</sup> I <sup>o</sup>	;			1
		(ii)	(mother) I <sup>A</sup> I <sup>O</sup>		(fati I <sup>A</sup> I <sup>I</sup>		child is homozygous; child must inherit I <sup>0</sup> from each parent ; Father has I <sup>A</sup> I <sup>B</sup> / has no	3
			gametes I <sup>A</sup> I <sup>O</sup>		IA	Ι <sup>Β</sup> ;	l <sup>o</sup> ;	
			offspring I <sup>A</sup> I <sup>A</sup>	I <sup>A</sup> I <sup>B</sup>	I <sup>a</sup> I <sup>o</sup>	I <sup>B</sup>		
			blood group A B;	AB	A			
	(b)		(mother) I <sup>A</sup> I <sup>O</sup>		(fati I <sup>B</sup> I <sup>0</sup>			
			gametes I <sup>A</sup> I <sup>O</sup>		I <sup>B</sup>	۱ <sup>0</sup> ;		
			offspring I <sup>A</sup> I <sup>B</sup> I <sup>0</sup> ;	I <sup>A</sup> I <sup>O</sup>	I <sup>B</sup> I <sup>O</sup>	Io		
			blood group AB O;	A	В			4
6	(c)		reference to rejection; doesn't clump/agglutinate; otherwise vessels blocked; no/less oxygen transported;					2 max

### Total 10 marks

#### PAPER TOTAL: 60 MARKS

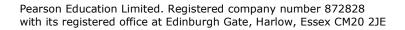
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