

edexcel

Mark Scheme (Results)

Summer 2012

International GCSE Human Biology (4HB0) Paper 02



Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please visit our website at www.edexcel.com.

Our website subject pages hold useful resources, support material and live feeds from our subject advisors giving you access to a portal of information. If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

www.edexcel.com/contactus

Pearson: helping people progress, everywhere

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2012 Publications Code UG032510 All the material in this publication is copyright © Pearson Education Ltd 2012

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 ^A I ^O Ch	ild I ^o I ^o	;			1
		(ii)	(mother) I ^A I ^O		(fati I ^A I ^I		child is homozygous; child must inherit I ⁰ from each parent ; Father has I ^A I ^B / has no	3
			gametes I ^A I ^O		IA	Ι ^Β ;	l ^o ;	
			offspring I ^A I ^A	I ^A I ^B	I ^a I ^o	I ^B		
			blood group A B;	AB	A			
	(b)		(mother) I ^A I ^O		(fati I ^B I ⁰			
			gametes I ^A I ^O		I ^B	۱ ⁰ ;		
			offspring I ^A I ^B I ⁰ ;	I ^A I ^O	I ^B I ^O	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

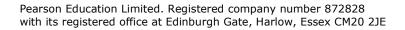
www.gradesuk.com



Further copies of this publication are available from Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467 Fax 01623 450481 Email <u>publication.orders@edexcel.com</u> Order Code xxxxxxx Summer 2012

For more information on Edexcel qualifications, please visit our website $\underline{www.edexcel.com}$







Llywodraeth Cynu**l**iad Cymru Welsh Assembly Government

