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5090 BIOLOGY

5090/02

Paper 2 (Theory), maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

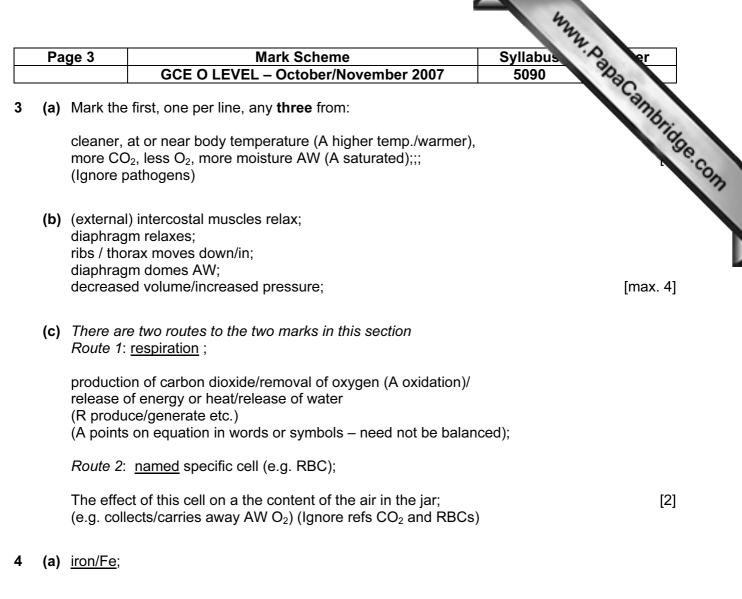
All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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CIE is publishing the mark schemes for the October/November 2007 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

	ige 2		vilabus Page er 5090
		Section A	Canny
(a)	(i)	xylem only shaded (A shaded on only one vascular bundle);	
	(ii)	correctly named (Ignore 'vessel');	vilabus 5090 Papacanut [
(b)	wat pull (R ร	nspiration/evaporation; ter/vapour + lost from leaf/stomata/plant; ls/draws/pushes + <u>water/solution</u> sucks) OR water (from transpiration) must be replaced; capillarity/root pressure AW/cohesion AW/adhesion AW;	[max.
	ref. thro cell (A p cell (R i	usion (R if osmosis mentioned with diffusion, ignore active transpo concentration gradient; bugh (cellulose) cell walls; I wall permeable; partially/selectively) I membrane is a p.p.m./allows molecules of dye to pass; if in osmosis context)	ort); [max.
	wat salt (R ı plaı	<u>ter</u> leaves <u>cells;</u> ter loss from plant or from plant part named; t solution more concentrated than cell sap/ref. water potential refs to quantity of water rather than concentration) gradient; nt wilts or described e.g. refs flaccidity/loss of turgor/of support ; drooping, R withering)	[max.
(a)	(i)	substrate/s;	
	(ii)	<u>product/s;</u>	[
(b)	(i)	<u>protein</u> (A casein);	
	(ii)	protease/pepsin/proteolytic (A rennin if casein given above);	mark
	(iii)	(poly)peptides/peptones/proteoses (A amino acids); (this mark not available with casein/rennin option)	independently [
(c)	rea falls	ph rises; iches peak between 35 and 55 °C; s to <u>zero</u> between 50 and 80 °C; vertical drop, R incurving drop)	[
(-)	() (
	(i)	active site/place where substrate fits AW (R lock / key); (A region/area) (A place where reaction occurs)	[



 (b) If the column headed 'mammals' is left blank, or if there is a <u>clear</u>, but inaccurate, attempt to describe mammal (as opposed to human) RBCs, then all three marks are available for correct statements re. bird RBCs .
 All comparisons must be valid pairs (R oval v. biconcave) Mark each line separately, (R refs. to haemoglobin/surface area)

(A longer) (A shorter)

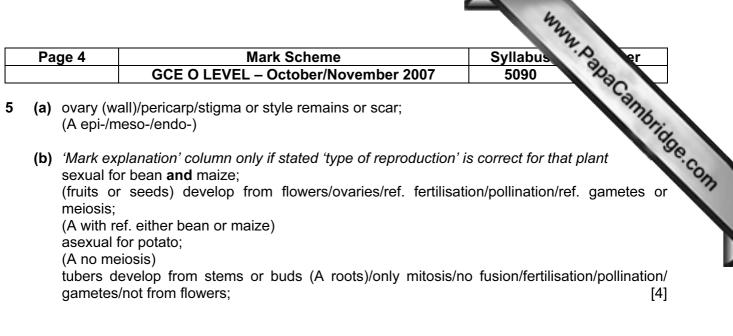
Any 3 from: nucleus + no nucleus, larger in size/smaller in size, larger than WBCs +smaller than WBCs, oval/egg-shaped + round isc, biconvex/not biconcave + biconcave, (R spherical);;; [3]

(c) (i) capillary,;

[1]

- Any **two** from: blood cells in single file AW, running between body cells, walls thin/permeable/one cell thick, substances pass through (at C), vessels in the form of a network,;; [2]
- (ii) tissue fluid/ECF/lymph/plasma/interstitial fluid (R blood); [1]
- (iii) pulse beat + in arteries/arterioles; greater pressure in arteries/lower pressure in veins; ref. arteries or D nearer heart/pump/ventricle; blood flows smoothly/no pulse + in veins/venules; resistance offered by capillary network; fluid lost from network;

[max 3]



 (c) bacteria or named; in root nodules; N₂ fixing (or process described); part of <u>nitrogen cycle</u>; (increases) nitrates in soil; needed to make proteins/amino acids; for plant growth;

[max. 4]

[Maximum for Section A = 50]

Section B

(Marks allowed anywhere on <u>annotated</u> diagrams)

 6 (a) (i) remove urea/nitrogenous waste/uric acid (R urine); salts/minerals/ions/toxins/hormones; <u>excretion;</u> water + in excess/ref. osmoregulation; (filtration) from blood;

> (ii) carries <u>urine;</u> from bladder + to outside; seminal fluid/sperms;

[max. 5]

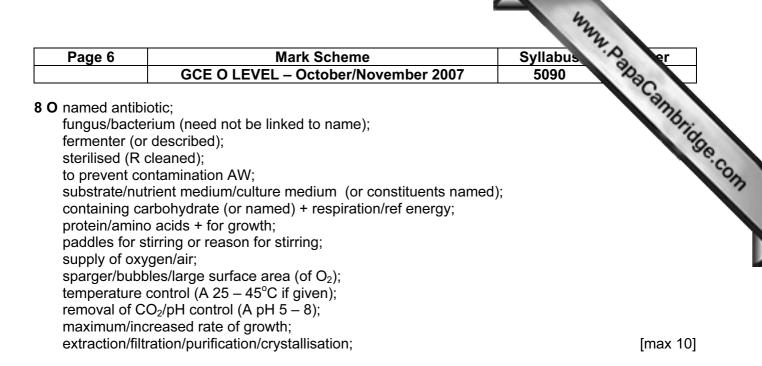
(b) connected to patients circulatory system/blood through machine; (along)
blood + passed through partially (etc.) permeable/dialysing tube; (R if blood is passing through the wall of the tube – Ignore named membrane)
<u>diffusion</u>/differential conc. solutes in bathing fluid/fluid renewed; of excretory/waste products/urea [see list for (a)(i)]; salts/small molecules [see (a)(i) list)]; from blood; large molecules (or named) stay in bloodAW; ref bathing/washing/dialysing fluid;

[Total: 10]

[max. 5]

	Mark Scheme	Syllabus er
	GCE O LEVEL – October/November 2007	5090 70aC
ref impu	/here in (i) , (ii) , or (iii)] <u>ılses;</u> ed via) synapses;	mbrie
(i) (sei (A r	nsory) from receptor/sense organ or named (A skin); nerve endings) (R finger) CNS/brain/spinal cord;	Syllabus 5090 AnaCambrid
	otor) from CNS/brain/spinal cord; effector or named;	
• •	he grey matter/within CNS or specified part; n sensory to motor;	[max. 6]
protectiv (A imme do not h OR (for Rapid C	actions) (external) stimulus or named e.g.; ve/always the same response; ediate) have to be learnt/automatic/instinctive/involuntary AW deliberate) controlled/ref. decision/conscious/voluntary; DR slow(er) for deliberate; ate) (always) involves the brain;	[max. 4] [Total: 10]

[Total: 10]



[Total: 10]