UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

MARK SCHEME for the October/November 2006 question paper

5090 BIOLOGY

9050/02 Paper 2, maximum raw mark 80

This mark scheme is published as an aid to teachers and students, 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.

The grade thresholds for various grades are published in the report on the examination for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses.

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Section A

1	(a)	thin winto la	ion/or good description of vall/epithelim (R ref. <u>cell</u> wall) acteals/lymph (Ignore capillaries)	
		lymph	returned to blood	max 4
	(b)	(i)	lipase/steapsin	1
		(ii)	optimum/best AW + for <u>enzyme/lipase</u> action (I ref. body temp)	1
	(c)		a <u>cids</u> rol/glycerine/propantriol	2
	(d)	(can)	acids/ref. smaller molecules pass through membrane/Visking tubing	
			entration gradient/diffusion idity of or lowers pH of water/ref acidity of molecules	max 3
				Total = 11
2	(a)	(i)	transpiration (A evapotranspiration) (R evaporation)	1
		(ii)	12.30	1
	(b)	(i)	warmer AW faster + evaporation/vapouration (I refs. to transpiration) lighter/brighter stomata open ref. increased wind/decreased humidity	max 4
		(ii)	water lost from plant cannot be replaced (A loses water faster than it gains water) overall decrease in water content of plant/loss of turgidity AW) (A refs. wilting)	
			stomata/pores + close	max 2
	(c)		evaporation of water/less loss of <u>latent</u> heat (R less transpiration)	
			ool plant reverse argument)	2
				Total = 10

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3	(a)	(i)	coronary artery	2
		(ii)	P <u>aorta</u> (-tic arch) Q <u>left</u> + atrium/auricle	2
	(b)		k the first, one per line) m: thinner or weaker + walls/valves/pressure ref. (A less muscular + walls)	2
	(c)	(i)	(mtf,opl) (A platelets) 2 from: fat/cholesterol/blood cells/clot(ted blood) (A atheroma for 1 mark) (A ref. fibres/fibrin)	2
		(ii)	natural response to damage or injury is for blood to clot AW platelets + release enzymes/cause fibrinogen to change to fibrin therefore drug prevents clotting (or implied – platelets cause blood to	•
				Total = 10
4	(a)	(i)	oxygen/temperature qualified (I air/temperature) (R warmth)	
		(ii)	cotyledon/seed leaves/endosperm	
		(iii)	testa (A seed coat) not accounted for	3
	(b)	(i)& ((ii) mark together food digested/ref. enzyme action (I breakdown) starch → sucrose or glucose/protein → amino acids transportation AW to growing regions/used for growth (or process described) used for respiration/correct energy reference	max 4
	(c)	(i) &	(ii) mark together (food storage region) will still lose mass more slowly AW plumule + photosynthesis AW large(r)/fast(er) increase in mass radicle slightly faster increase in mass (than when in dark) due to more/faster growth	max 4
				Total = 11
5	(a)		uct/Fallopian tube (mark the first) escription of oviduct)	1
	(b)	mitos	sis (-totic)	1
	(c)	in lin of ut	antation AW ing/endometrium (R wall) erus/womb rentiation AW/ref. placental devpt. (I fetal membranes)	max 2

Mark Scheme

Syllabus

Paper

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Total = 8

Total for Section A = 50

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Section B

6 (a) (A any three facts linked to a process) osmosis is simple diffusion partially/selectively/semi-permeable membrane correct refs. in each case to: no energy/energy required

water only/ions AW or larger molecules down/against concentration gradient

(R along)

max 3

(b) (i) salts ions or one named (A minerals) (R nutrients)

from soil ref. root hairs

to make proteins/amino acids/DNA

chlorophyll (R chloroplasts)

even when scarce in surrounding soil AW

(could be ref. to concentration gradient)

max 4 for (i)

(ii) glucose

amino acids

uptake from gut

through (micro)villi

*for protein (or named) manufacture (linked to amino acids)

*for respiration/correct energy ref. (linked to glucose)

max 7 for (b)

(mark 1st.2)

Or kidneys; reabsorption; 2 named salts or any 2 from glucose, amino

acids, urea, salts (unspecified or one named);;

ref. osmoregulation; any <u>one</u> of those marked * above; max 7 for (b)

Total = 10

7 (a) ref. <u>hypothalamus</u>

nervous control/impulses/brain

less active sweat glands/sweating stops

(A inactive)

less evaporation (of sweat) (R no evaporation)

vasoconstriction AW

of arteries/-erioles/blood vessels (R capillaries/veins)

less blood

to capillaries (A ref. heat loss from)

less heat lost

shivering generates heat/hair erection decreases heat loss (or insulates)/adrenaline

release/higher metabolic rate

one behavioural reference (e.g. moving/putting clothes on)

max 7

(b) a change (in level/of set point) AW

is responsible for/triggers/causes/ref. sensor/ref. receptor

(If given, accept specific examples instead of general account)

a response/reaction

(which leads to) restoration of original level

max 3

Total = 10

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8 E (a) mosquito is a human parasite

(breeds in) large numbers

attracted to warm bodies

feeds on blood

sharp mouthparts/relatively painless bite

feeds at night/while victim sleeps

spits before sucking/ref. anticoagulant

vector of/carrier of/not seriously affected by/host to + human pathogen(s) (or named) AW

(R named disease)

carry many pathogens

(fly) from person to person

max 5

(b) intimate body contact or described

bacterium/a/spirochaete/Treponema

primary sore or described/papule/chancre

a secondary symptom described

(headache/slight pyrexia/rash/skin lesions/ulceration/hair loss)

(lengthy) dormant period

tertiary symptom described (organ destruction)

antibiotic or named (doxycycline, erythromycin, tetracycline)

(A 'penicillin' to mean antibiotic)

need for early diagnosis/treatment

max 5

Total = 10

8 O (a) named plant or animal (with some economic importance)

(plausible for description given)

named selected feature

breeding of specimens both with desired feature

selection of offspring with best of desired feature

over a period of time/repitition

financial reward (i.e. of some pecuniary benefit)

danger of inbreeding/disadvantage to organism involved (e.g. highly-strung dogs/Pekingeses with breathing problems)

max 6

(b) named organism + required characteristic

(i.e. what you are breeding for)

required characteristic ensured/no variation

no dangers of inbreeding/of introduction of undesirable traits

*cheap/large numbers of offspring/one parent needed

*relatively quick

*genetically identical

max 4

Any of the marks indicated with * available for a fungus or a seaweed

Up to a max 2

Total = 10