MARK SCHEME for the October/November 2010 question paper

for the guidance of teachers

5125 SCIENCE (PHYSICS AND BIOLOGY)

5125/04

Paper 4 (Theory – Biology), maximum raw mark 65

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

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	Page 2			Mark Scheme: Teachers' version	Syllabus	Paper	
				GCE O LEVEL – October/November 2010	5125	04	
1	(a)	A –	- arter	ry, B – vein;		[1]	
	(b)	(i)	any ∆ /ar	two from: terv is thicker walled than vein:			
			A/ar B/ve	tery has smaller lumen than vein; ein has valve, artery does not;		[2]	
		(ii)	any artei bloo	two answers that match those in (i) – ora for each: ry has to withstand greater (blood) pressure; d moves faster in artery than in yein:			
			valv	e needed to prevent backflow in vein;		[2]	
	(c)	(i)	bloo hear	d flow to heart is reduced/prevented; t muscle does not receive enough oxygen;		[2]	
		(ii)	any smo	two from: king;			
			lack	of exercise;		[2]	
2	(a)	(i)	plum	nule;		[1]	
		(ii)	radio	cle;		[1]	
	(b)) oxygen;			[1]		
	(c)	(i)	gluc (igno	ose + oxygen \rightarrow carbon dioxide + water; ore energy on right but penalise on left or on arrow)		[1]	
		(ii)	coty	ledons;		[1]	
	(d)	at 2	2°C e	nzyme action is very slow so seeds germinate very slo	wly;		
		at 6	S0 °C	enzymes are denatured so seeds do not germinate;		[3]	

	Page 3		}	Mark Scheme: Teachers' version	Syllabus	Paper
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3	(a)	(i)	carb (igno igno	on dioxide + water → glucose + oxygen; ore energy/light on arrow or on left but penalise on righ re chlorophyll on arrow but penalise on left or right)	t,	[1]
		(ii)	from abso	(sun)light; orbed by chlorophyll;		[2]
	(b)	phl	oem;			[1]
	(c)	(i)	sexu asex	al reproduction produces genetically dissimilar offsprir and reproduction produces genetically identical offsprir	ng; ng;	[2]
		(ii)	sexu asex prod	al reproduction – new varieties produced/allows variat cual reproduction – only one parent plant required luces new plants more quickly;	ion; /does not requii	re pollination/ [2]
	(d)	see allo	eds in wing	fruit are transported/dropped by animals; colonisation of new areas by strawberry plants;		[2]
4	(a)	(i)	phot	osynthesis;		[1]
		(ii)	com	bustion;		[1]
	(b)	(i)	gluc (igno	ose \rightarrow (carbon dioxide) + ethanol; ore energy on right but penalise on left or above arrow))	[1]
		(ii)	any aero aero	two from: bic requires oxygen/anaerobic does not require oxyge bic produces more energy/anaerobic produces less er	n; nergy;	[2]
			acro			[4]
	(c)	(i)	carb	on dioxide put into the air by A is removed by B;		[1]
		(ii)	C is whe	burning of fossil fuels; n burned these fuels burn to produce carbon dioxide;		[2]
	(d)	(i)	teeth allov	n reduce the size of food particles; ving more contact with enzymes/increasing rate of brea	akdown reaction;	[2]
		(ii)	solu into	ble products of digestion pass through wall of small int the blood;	estine;	[2]

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5 (a) mechanical surgical

surgical natural chemical hormonal All five correct = 3 marks, three or four correct = 2 marks, two correct = 1 mark [3]

(b) Any three from:

advantage – it is a 100% certain method; because ova cannot travel down oviduct to be fertilised/sperm cannot travel up oviduct to fertilise ova; disadvantage – method is permanent/irreversible; so woman cannot later change her mind to become pregnant; [3]

Section B

6 (a) Any five from the following, but max three from one list (effects or problems):

effects: reduced self-control/aggression; slowing of reactions; addiction; withdrawal symptoms;

problems: liver disease; unwanted pregnancy; crime; spread of sexually transmitted diseases; lack of employment; increased likelihood of accident;

[5]

(b) any two measures with any three further marking points:

increase tax on/price of alcoholic drinks; people will not be able to afford to drink so much; may increase poverty for families of drunks;

reduce hours that drinks can be purchased; people will not be able to drink for so long; businesses selling drinks will lose profit;

increase minimum age for drinking alcohol; younger people will not be able to drink; hard for those selling drinks to check age of drinkers;

increase penalties for drunken behaviour; some people will be deterred from drinking too much; may increase poverty for families of drunks;

accept any other reasonable answers

	Page 5		Mark Scheme: Teachers' version	Syllabus	Paper
			GCE O LEVEL – October/November 2010	5125	04
7	(a)	water en by osmo down wa water tra by capilla water lea by diffusi	ters root hair cell; sis; iter concentration gradient from soil; vels up stem in xylem; arity/transpiration pull; aves through stomata; ion/transpiration;		[7]
	(b)	Any three water is in cell react water mater turgor pro- sugar is in	e from: required for photosynthesis; tions are carried out in solution; aintains shape of cells; essure holds plant upright; transported as solution;		[3]
8	(a)	excretior of toxic n of waste these ma e.g. urea e.g. carb	n is removal from organism; naterials; products of metabolism; aterials would poison the body if they remained; ; on dioxide;		[6]
	(b)	amino ac in the live urea is c in kidney (urine is	cids are converted to urea; er; arried by blood to the kidneys; rs urea is filtered out of the blood to form urine; excreted)		[4]