

Wany, Dana Cambridge, com MARK SCHEME for the October/November 2009 question paper

for the guidance of teachers

9700 BIOLOGY

9700/22

Paper 2 (Structured Questions AS), maximum raw mark 60

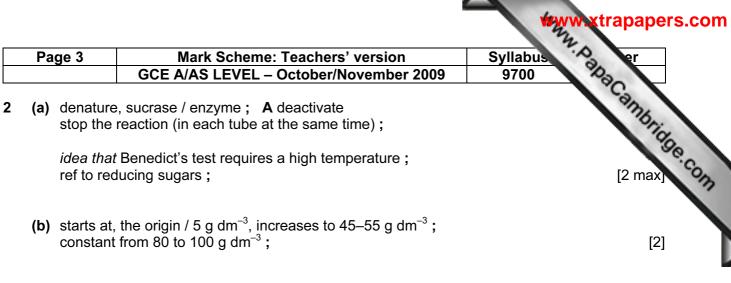
This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began,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

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

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Pa	ge 2		Syllabus er
		GCE A/AS LEVEL – October/November 2009	9700 22
(a)	(i)	calcium ions are, water soluble / charged / not, fat / lip ionic ; A not oil soluble phospholipid bilayer / AW, is hydrophobic / AW ;	Syllabus 9700 wid, soluble / hydroph [1]
	(ii)	active transport / active uptake ;	[1]
		 (calcium ions) moved against their concentration gradient ref. to, carrier <u>protein</u> / transport <u>protein</u> / pump <u>protein</u>; R channel protein ref. to calcium ions combine with binding site ; carrier protein, changes shape / conformational change ; 	; ignore ion pump
		ref. to <u>ATP</u> ;	[2 max]
(b)	antil opso ref.	cteria / antigen / epitope, combine(s) with / attach to/ recognibody on bacteria combines with receptor ; sonisation / opsonisation described ; e.g. facilitates phago to constant region ; mbrane infolds / invaginates / envelops / engulfs / enclose /	cytosis / AW ;
		accept answers without 'membrane' where implied previous mbrane fuses ; form, vacuole / vesicle / phagosome (enclosing bacteria) ;	usly / later [3 max]
(c)	lyso (cata	osomes fuse with, vacuole / vesicle / phagosome ; A form secondary lysosomes osomes contain, enzymes / named digestive enzyme ; talyse) hydrolysis / digestion ; A breakdown gests / breaks down) protein / murein (or peptidogly phospholipid / nucleic acid / DNA / RNA ;	rcan) / carbohydrate / lipid /
	nam	med bond; e.g. peptide, glycosidic, ester, phosphodiester	[4 max]
			[Total: 12]



(c)	description	conc	rate*
. ,		5	0.0036
		10	0.0069
		15	0.0105
		20	0.0133
		50	0.0213
		100	0.0222

penalise lack of units once only

- increase in rate of hydrolysis to approx 50 g dm⁻³;
 A decrease in time taken to approx 50 g dm⁻³ / correct rate calculations* to show an increase
- 2 remains constant / plateaus / levels out / AW, from approx 50 g dm⁻³ to 100 g dm⁻³;

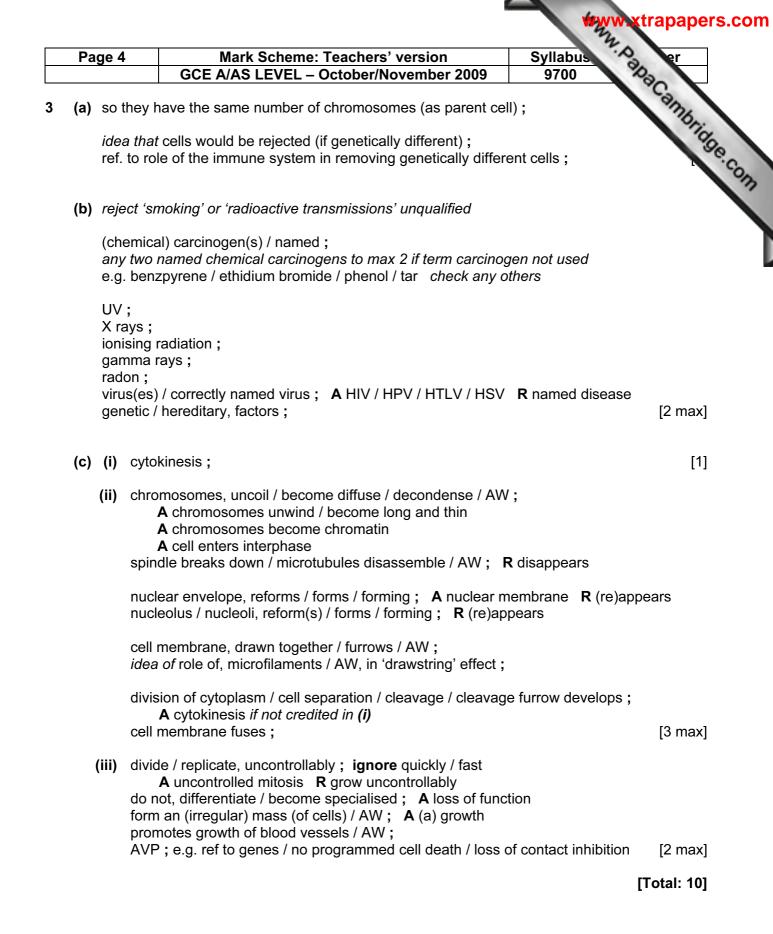
explanation to max 4

- 3 (sucrase / enzyme) hydrolyses / breaks , <u>glycosidic</u> bonds ;
- 4 forming, reducing sugars / glucose / fructose ;
- 5 idea that concentration is the limiting factor, at low concentration of, sucrose / substrate;
- 6 (at low concentrations) active sites, unoccupied / available;
 - A as concentration increases, more active sites are occupied / more enzymesubstrate complexes formed / AW
- 7 at higher concentrations all active sites, occupied / saturated / AW ; R enzymes for 'active sites'
- 8 substrate, in excess / AW;
- 9 V_{max} reached / working at maximum rate ;

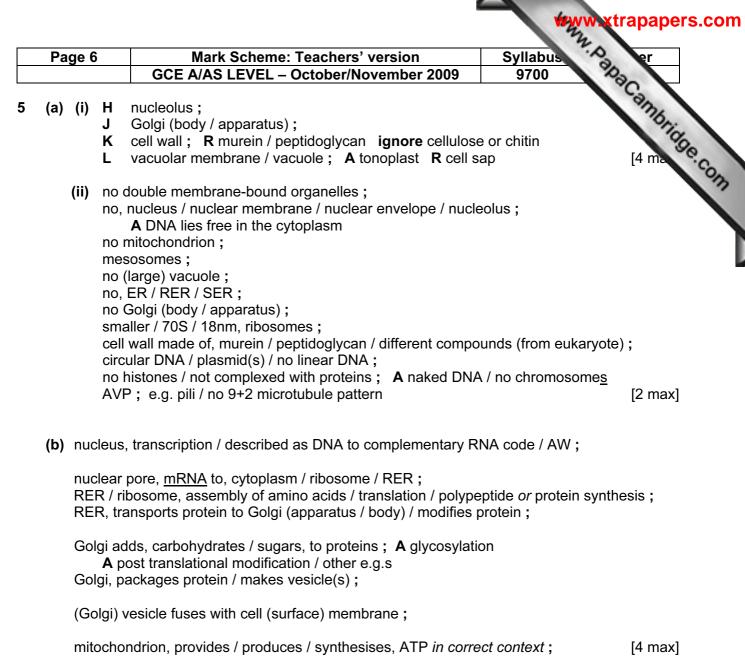
idea that

10 at higher concentrations, enzyme / sucrase, is the limiting factor; [5 max]

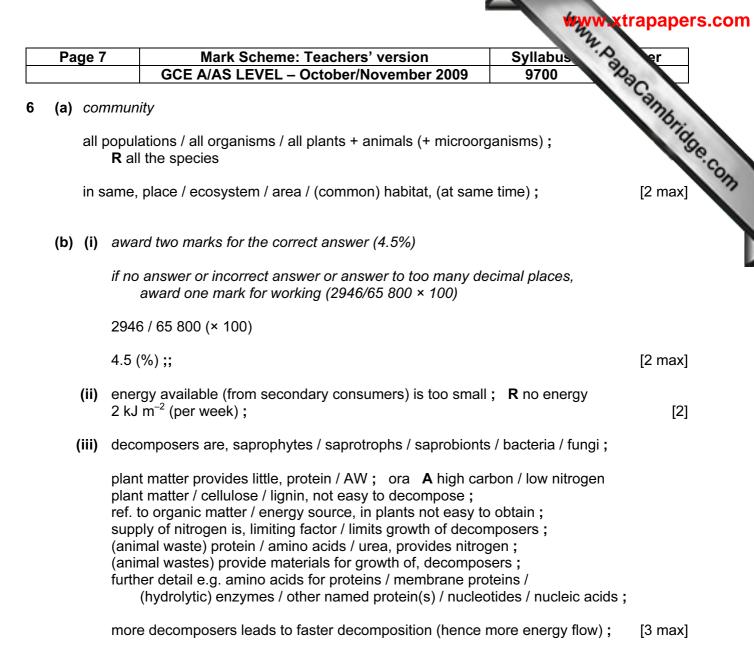
[Total: 9]



er	Syllabus	ark Scheme: Teachers' version	e 5	Paç
Day	9700	AS LEVEL – October/November 2009		
abaCambrid		face of mesophyll cells ; es / evaporation ; <i>in correct context</i> esophyll cell walls ; ir) air spaces ; fully saturated ; ffuses through stomata ; A 'water' if evap	wate fron into air v <u>wate</u>	(a)
[3 max]	<u>Jotentiai</u> / Itom	<u>ential gradient</u> / from a high to a low <u>water</u> ve to more negative <u>water potential</u>	uow	
s;	h units	A other correct comparative data quote w ptake increases from 0800 to 1900–1930 a h^{-1} ; A other correct comparative data qu	, 0.3- mas	
	ake)	water, loss peaks before rate of water upta on related to light (mass loss) and dark (up mes of peaks for both rates; 1600 and a		
		te of mass loss, ref. to steeper gradient ;	060	
1830 ; [4 max]	0700 and approx	water, loss is higher than uptake, betweer	(rate	
	inuous column ;	een water <u>molecules</u> ; accept here or for adhesion once only ater is pulled up the xylem / water in a con	hydroge	. ,
		drostatic pressure	i gnore r	
		alls ; ck' to cellulose / cellulose is hydrophilic ; gh it is hydrophobic!)		
[3 max		gin te to try at option of t		



[Total: 10]



[Total: 9]