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Biology

Assessment Unit AS 1

assessing

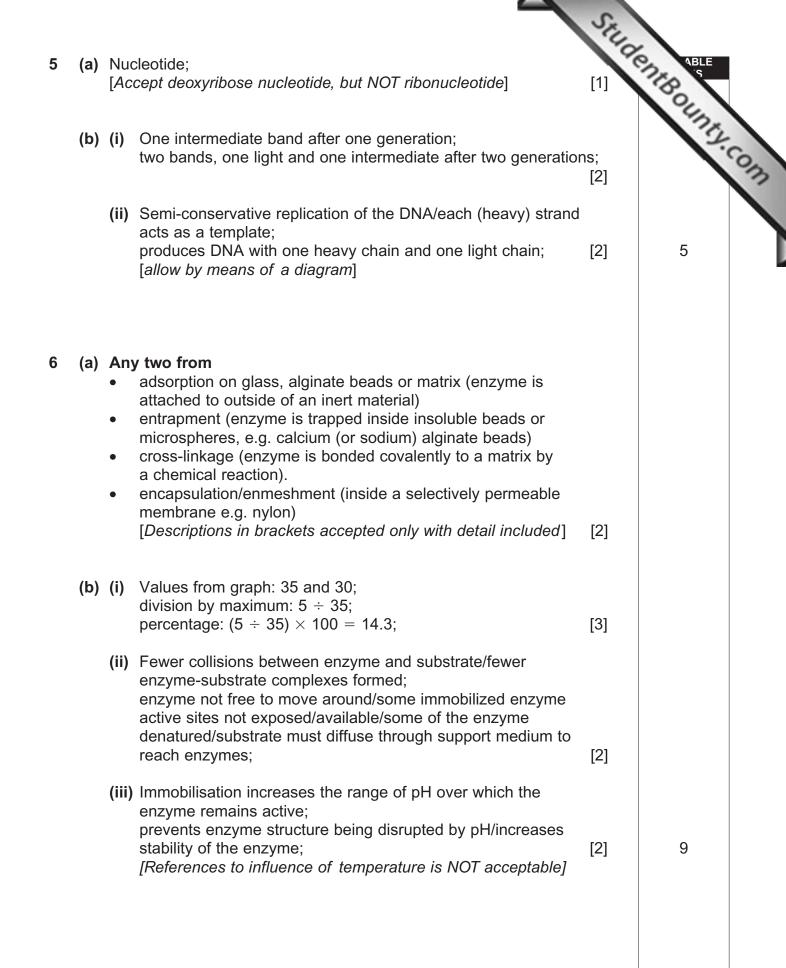
Molecules and Cells

[AB111]

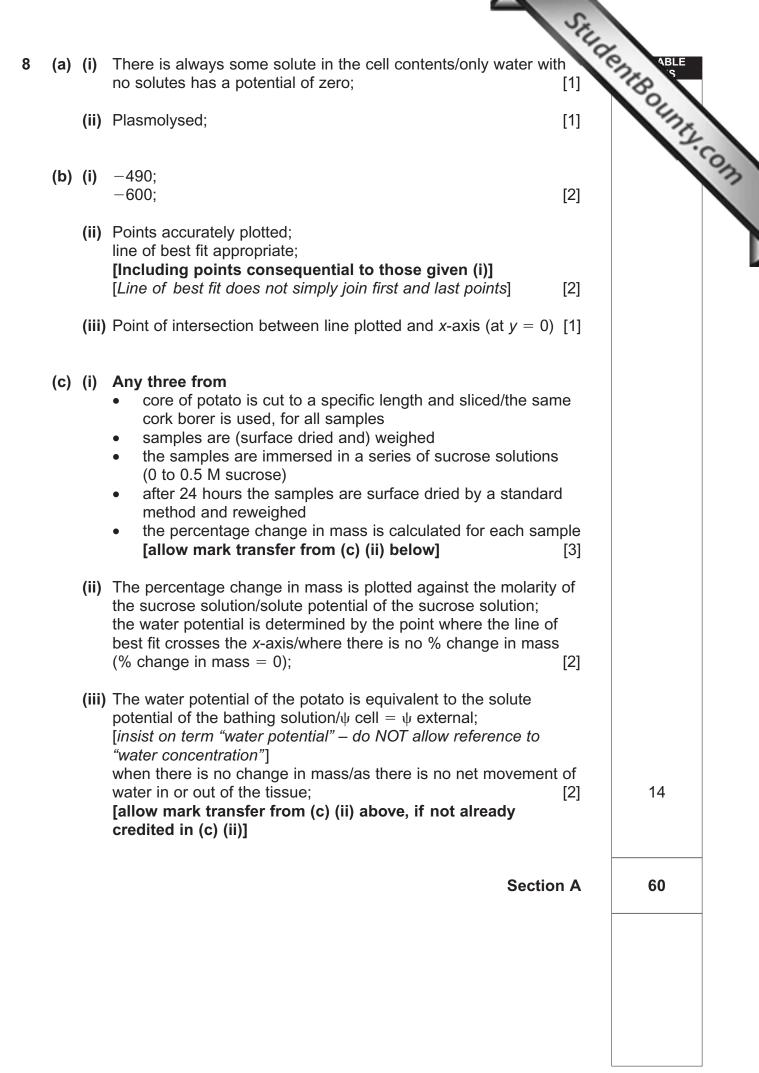
MONDAY 13 JUNE, AFTERNOON

MARK SCHEME

; de Co	enotes alternative points enotes separate points mments on mark values are given in bold mments on marking points are given in <i>italics</i>	Stude	onthounty.	
	Section A			m
1	Prophase I; anaphase II; telophase II; prophase I; <i>Must refer to relevant I and II divisions</i>	[4]	4	
2	 (a) In both: cytoplasm, mitochondria, endoplasmic reticulum, nucleus [Accept any 3]; in plant only: vacuole, cell wall; in animal only: glycogen granules; 	[3]		
	(b) The cell wall is made from chitin/the cell is multinucleated (lacks dividing membranes)/cells contained within hyphae;	[1]	4	
3	 A: Cellulose; B: starch; C: sucrose; D: maltose; E: glucose; 	[5]	5	
4	 (a) A: Muscularis mucosa [NOT just muscle]; B: crypt Lieberkühn/Paneth cells/stem cells; C: goblet cell; D: columnar epithelium [NOT just epithelium]; E: mucosa [NOT villus]; 	[5]		
	(b) This is a surface view of a villus/section of epithelium layer (surrounding villi are shown sectioned);	[1]		
	(c) The lacteal absorbs lipids/fatty acids and glycerol;	[1]	7	



	STU		
7 (a)	 Any three from more glucose is absorbed by living intestinal cells than arabinose similar amounts of glucose and arabinose are absorbed by cyanide-treated cells treatment with cyanide causes a (significant) reduction in the rate of absorption of glucose similar treatment with cyanide does not affect the rate of arabinose absorption 	ABLE S	com
(b)	Arabinose; as the rate remains the same in the intestinal cells treated with cyanide; suggesting that ATP/respiration is not needed for arabinose absorption/it is a passive process [<i>NOT energy for ATP</i>]; [3]		
(c)	 Glycogen; Any three from contains α-glucose molecules joined by condensation reactions/glycosidic bonds both 1–4 and 1–6 bonds are present 1–4 bonds create the straight chains/1–6 bonds create branching [4] 		
(d)	 Any two from an enzyme inhibitor that bears no resemblance to the enzyme's natural substrate/may attach to a part of the enzyme other than the active site/doesn't compete with substrate for the active site alters the shape of the active site/permanently binds to (blocks) the active site inhibition does not depend on the relative concentration of the inhibitor [2] 	12	



Section B

9 Thirteen points, with at least six from each section

Structure:

- the primary structure is the sequence of amino acids in a • polypeptide chain
- StudentBounts.com amino acids are linked by peptide bonds/condensation reactions (between -NH₂ and -COOH groups)
- the secondary structure is when the polypeptide chain winds into a alpha helix and beta pleat
- (the helix is) held in shape by hydrogen bonds (between -NH and -C=O groups)
- the tertiary structure is when the helix folds further into a **globule** (making it more compact)
- this is held in shape by **bonds between neighbouring R-groups**
- such as hydrogen bonds, ionic bonds, disulphide bridges and hydrophobic interactions [any two]
- the quaternary structure is when more than one polypeptide is present in the protein
- fibrous protein lack a tertiary structure
- conjugated proteins also have a non-protein part/prosthetic group [appropriate example]

Role in cell-surface membrane:

- proteins stabilize membrane structure
- may act as hydrophilic channels
- that allow polar molecules (e.g. ions) to diffuse through the membrane
- aquaporins are specific protein channels through which water can travel
- some transmembrane proteins may act as carriers that can change shape
- each carrier/channel is specific to one substance (only fits one substance)
- some are used for facilitated diffusion
- others are used for active transport which requires energy expenditure
- membrane bound enzymes
- glycoproteins/lipoproteins act as recognition sites/antigens on the outer surface of a cell
- act as receptors •
- act to anchor the cytoskeleton
- other appropriate role

[13]

Quality of written communication:

- StudentBounty.com 2 marks: The candidate expresses ideas clearly and fluently through welllinked sentences, which present relationships and not merely list features. Points are generally relevant and well-structured. There are few errors of grammar, punctuation and spelling.
- 1 mark: The candidate expresses ideas clearly, if not always fluently. The account may stray from the point or may not indicate relationships. There are some errors of grammar, punctuation and spelling.
- 0 marks: The candidate produces an account that is of doubtful relevance or obscurely presented with little evidence of linking ideas. Errors in grammar, punctuation and spelling are sufficiently intrusive to disrupt the understanding of the account. [2]

Section B

Total

75

15

15