Assessment Schedule – 2006

Biology: Describe cell structure and function (90464)

Evidence Statement

Q	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
1 (a) (b) (c)	**TWO correctly named organelles WITH description of function.** Golgi: modify / package / assembles / transports/ secretes : materials / chemicals / proteins / substances / enzymes / secretions. Chloroplast: photosynthesis / light energy into chemical energy / glucose / starch. Ribosome: protein synthesis.		
2(a)	**Description of why enzyme shape of is important,** eg: • enzyme shape / active site / cleft : allows substance / substrate : bind / join / react • enzyme shape / active site / cleft : substrate shape : match / fit • Labelled / annotated diagram showing <u>model</u> (either induced fit or lock-key)	**Explanation of how enzyme shape allows it to function,** eg: • enzyme shape / active site/cleft matches substrate shape : lowers energy required / specificity / orientation of substrate • enzyme shape unchanged : used again • reaction shown in labelled diagram – enzyme : substrate : active site: product • enzyme shape / active site/cleft matches substrate shape : denatured : won't work.	
2(b)	**Description of what happens to the enzyme structure over 45ºC,** eg: • denatures / changes shape/ changes active site.		
2(c)	**Description of numbers and fermentation rate at each temperature,** eg: • 26ºC / 1st hour : greatest / optimum increase yeast number / enzymes • and 35ºC / next 2 hours greatest : optimum fermentation.	**Explanation of why important to have temperature at 26 ºC OR at 35 ºC**, eg: • number of yeast need to be increased : best rates of fermentation later / many enzymes available for fermentation. • optimum fermentation produces most CO_2 • increased temperature : increased enzyme activity.	**Discussion of why important to have temperature at 26 ºC first AND at 35 ºC last,** eg: • number of yeast increased first so that high yeast numbers / increased no. enzymes: for fermentation later **AND** optimum fermentation : optimum enzyme activity / CO_2. (Linking of the first and last temperature to process.)

2(d)	**Describes the effect of increased sugar concentration,** eg: • water moves out of yeast : osmosis / from high to low concentration / down concentration gradient / high to low potential • needs water to dissolve : fermentation / reaction • less enzymes / lower enzyme activity.	**Explains how increased sugar concentration slows fermentation rate,** eg: • water moves out of yeast by osmosis : causing yeast cells to shrivel / collapse / dehydrate / plasmolysis / not enough water : slow fermentation • less water : yeast dies / plasmolysis / shrivel / collapse / dehydrate / plasmolysis : less enzymes released.	
2(e)	**Description of how enzyme inhibitors affects enzyme activity,** eg: • enzyme shape changes / active site blocked.	**Explanation of how enzyme inhibitors affects enzyme activity,** eg: • enzyme shape changes / active site blocked : substrate can not combine with enzyme.	
3	**Description of TWO of osmosis, contractile vacuole function, the environment or energy needed.** • Contractile vacuole controls the volume of water inside the cell / removing unwanted water. • (Osmosis) movement of water down the concentration gradient/ high to low concentration. • Freshwater high water concentration / high water potential : paramecium low water concentration/ low water potential. • Osmosis : passive : contractile vacuole filling / emptying : active • Action of contractile vacuole/ movement water into cell : prevents cell bursting /osmoregulation.	**Explanation of the relationship between osmosis, contractile vacuole function, and environment or energy or homeostasis,** eg: • greater water concentration externally / outside / freshwater : water moves in by osmosis / movement of water down the concentration gradient/ high to low concentration : contractile vacuole must remove excess water. • water moves in by osmosis / movement of water down the concentration gradient/ high to low concentration : contractile vacuole must remove excess water : energy needed / oxygen required. • water moves in by osmosis / movement of water down the concentration gradient/ high to low concentration : contractile vacuole must remove excess water : prevent cell bursting / maintain osmoregulation.	**Discussion of the relationship between osmosis, the contractile vacuole function, the environment and energy or homeostasis,** eg: • greater water concentration externally / outside / freshwater : water moves in by osmosis : contractile vacuole must remove excess water : active transport / against concentration gradient / collect water / pumps : energy needed / oxygen required. • greater water concentration externally / outside / freshwater : water moves in by osmosis : contractile vacuole must remove excess water : prevent cell bursting / maintain osmoregulation.
4(a)	**Describes the importance of mitochondria for the movement of glucose,** eg: • mitochondria provide the energy / ATP. • energy needed for active transport.	**Explanation of the importance of mitochondria for the movement of glucose,** eg: • mitochondria : energy/ATP : active transport/ low to high concentration : glucose.	
4(b)	**Describes adaptation of membrane,** eg: • increase surface area.	**Explanation of how membrane is adapted to carry out function,** eg: • increased surface area : increases rate / amount : diffusion / absorption.	

5	**Description of location of chloroplasts or benefit to photosynthesis,** eg • chloroplast : near cell membrane / larger no. of chloroplast at top : of cell • more light / CO_2 received : cell • more glucose/chemical energy Answer must relate to palisade cell.	**Explanation of how location of the chloroplasts affects the process of photosynthesis,** eg • chloroplast : near cell membrane / larger number of chloroplast at top : more light received / less distance for CO_2 to diffuse : more glucose / photosynthesis Answer must relate to palisade cell.	

Judgement Statement

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Achievement	Achievement with Merit	Achievement with Excellence
FIVE questions answered correctly. Minimum 5 × A	SIX questions answered correctly, including at least FOUR at Merit level. Minimum 4 × M + 2 × A	SEVEN questions answered correctly, including at least FIVE at Merit level and at least ONE at Excellence level. Minimum 1 × E + 5 × M + 1 × A