NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Level 2, 2003

Biology: Describe cell structure and function (90464)

National Statistics

Assessment Report

Assessment Schedule

Biology: Describe cell structure and function (90464)

National Statistics

Number of Results	Percentage achieved			
	Not Achieved	Achieved	Merit	Excellence
10,353	33.6%	35.5%	24.4%	6.5%

Assessment Report

Every candidate for a National Certificate of Educational Achievement examination paper is expected to:
- read the question and do what the question asks
- allow adequate time to complete answers
- be accurate: check and/or proofread
- use appropriate technical terms
- bring the correct equipment
- write and/or draw clearly
- use pen if work is to be eligible for reconsideration.

General Comments

Candidates generally showed the level of understanding required to achieve the standard. The articulation of how and why something happens, and the linking of explanations to biological ideas, are essential to the success of this standard.

In general, candidates demonstrated a relatively simplistic understanding of photosynthesis and respiration as cell processes. In general, candidates correctly identified that cells other than animal cells respired. However, candidates showed a limited understanding of this very important process. Some candidates stated that plant cells carried out photosynthesis during the day and respiration at night, or that photosynthesis was a form of respiration in plants.

Candidates need to have a better understanding of the biological concepts and processes relating to cell structure and function of unicellular organisms. When answering resource-based questions candidates must refer to the information provided, and be prepared to apply their understanding of biological ideas. Many candidates simply recalled facts and did not answer the question, particularly for Questions two and three.

Assessment Schedule

Biology: Describe cell structure and function (90464)

Evidence Statement

	Achievement	Achievement with Merit	Achievement with Excellence
Criteria	Describe biological concepts and processes relating to cell structure and function.	Explain biological concepts and processes relating to cell structure and function.	Discuss biological concepts and processes relating to cell structure and function.
Judgement	Provides evidence of FIVE description level answers in relation to cell structure and function, ie: **5 A**	Provides evidence of THREE explanation level answers in relation to cell structure and function, ie: **3 M**	Provides evidence of discussion level answers in relation to cell structure and function, ie: **1 E**

Question	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
1(a)	Description relating structure of cell, eg: cytoplasm / Endoplasmic Reticulum / ER / RER		
1(b)	Description of cell / organelle function, eg: **Cell** secretion / lots of protein synthesis / digestion **Organelle** (ribosomes) site of protein synthesis **OR** (Golgi Body) makes secretions / store / collect / package substances / modify.	Explanation that links two of: Organelle role / cell function / digestion, eg: ribosomes produce proteins which are used as secretions from this cell.	
1(c)	Description of enzyme structure, eg: protein / amino acid chain **AND** shape / active site / folded.		
1(d)	Description to counter part of statement: all plant cells carry out photosynthesis / all cells respire, but they also carry out respiration.	Explanation to counter 'All plant cells' with reference to purpose / organelle of photosynthesis, eg: not all plant cells carry out photosynthesis, because some do not contain chloroplasts / native black orchid. **OR** all cells carry out respiration with reference to purpose / organelle of respiration, eg: all cells carry out respiration to release energy.	Discussion to counter 'All plant cells' with reference to purpose / organelle of photosynthesis **AND** 'Only animal cells', carry out respiration with reference to purpose / organelle of respiration.

Question	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
2(a)	Description of the movement of the flagellum, eg: whips / moves in circles / moves back and forth / beat		
2(b)	Description of eye spot function / purpose, eg: senses light / shadow / moves towards light / moves away from shadow / carry out photosynthesis / increased photosynthesis / the eye spot helps *Euglena* by responding to light.	Explanation of advantage of eye spot for photosynthesis / other feasible advantage, eg: senses light / shadow / organism moves to more light / organism moves towards less light **AND** carry out / increased photosynthesis / to find food.	
2(c)	Relative description to plant cells / animal cells, eg: plant cells have chloroplasts / starch granules **OR** animal cells have flagella / eye spot / mouth / cytostome / contractile vacuole.	Explanation that compares *Euglena* to one typical plant cell feature **AND** typical animal cell feature, eg: *Euglena* has chloroplasts that are found in plant cells **AND** *Euglena* has a pellicle, whereas plants have a cell wall.	Discussion that compares *Euglena* to two typical plant cell features **AND** two typical animal cell features **AND** must include complete comparison / clear implication for each statement. **Typical plant cell features** Chloroplasts / starch granules. **Typical animal cell features** Flagellum / eyespot / stigma / cytostome / mouth. eg: *Euglena* has chloroplasts and starch granules that are only found in plant cells **AND** *Euglena* has a flagellum and a mouth which are found in animals, but not in plants.
	Candidates must use features on the diagram.		

Question	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
3(a)	Description of role of contractile vacuole, eg: Remove water / osmoregulation / maintains water balance / maintains fluid balance / maintains osmotic potential.		
3(b)	Description with reference to water, eg: due to more water entering cell / concentration gradient into cell / hypotonic solution on outside of cell.	Explanation with reference to more water entering cell **AND** concentration gradient / osmotic potential / gradient / description of osmosis / water pressure.	
3(c)	Description relating to energy / respiration / active transport.	Explanation of oxygen concentration **AND** rate of respiration / rate of active transport / amount of energy available.	
3(d)	A description of one difference: osmosis or diffusion: **Osmosis** semi-permeable membrane / water movement. **Diffusion** many materials / particles.	Explanation of difference between diffusion and osmosis: diffusion occurs for many materials **AND** osmosis involves water across semi-permeable membrane.	

Judgement Statement

Judgement statements (formerly referred to as sufficiency statements) help students understand how their overall results for each standard were arrived at.

	Achievement	Achievement with Merit	Achievement with Excellence
Criteria	*Describe biological concepts and processes relating to cell structure and function*	*Explain biological concepts and processes relating to cell structure and function*	*Discuss biological concepts and processes relating to cell structure and function*
Judgement	5 × **A**	5 × **A** ***plus*** 3 × **M**	5 × **A** ***plus*** 3 × **M** ***plus*** 1 × **E**