National Certificate of Educational Achievement

2012 Assessment Report

Biology Level 1

90927 **Demonstrate understanding of biological ideas relating to micro-organisms**

90928 **Demonstrate understanding of biological ideas relating to the life cycle of flowering plants**

90929 **Demonstrate understanding of biological ideas relating to a mammal as a consumer**

COMMENTARY

Note that the space provided for an answer gives an indication of the length of response required. Some candidates wrote considerably more than they needed to, often without answering the question. Candidates are encouraged to consider why they require more paper. They need to ensure that they are answering the question, rather than going off topic or repeating information. Candidates would benefit from planning their answers so that relevant information is provided in a concise manner.

STANDARD REPORTS

90927 Demonstrate understanding of biological ideas relating to micro-organisms

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They typically:

- described basic structure or function of micro-organisms
- gave good descriptions of structure or function but failed to link these to life processes
- used common language in the place of biological terminology (e.g. growing, breathing and eating instead of reproducing, respiring and feeding)
- used the term respiration but failed to recognise the type of respiration (i.e. aerobic or anaerobic)
- related to the context of sewage treatment with difficulty, failing to recognise the connection between compressed air, oxygen and aerobic respiration
- demonstrated some understanding of the process of canning, but failed to link it to either food safety/storage or a life process of the micro-organisms
- gave incomplete information such as writing an equation for aerobic respiration without relating it clearly to their answer.
- gave incomplete information such as a diagram for aerobic respiration without labelling it.

NOT ACHIEVED

Candidates who were assessed as Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They typically:

- failed to make links between the given context and the life processes of micro-organisms
- lacked basic knowledge such as the names of parts/structures of micro-organisms
- wrote about bacteria, fungi and viruses as if they were different life stages of the same organism.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit typically:

- made connections between structures of micro-organisms and functions or growth patterns

- demonstrated understanding of the process of canning and linked it to either food safety/storage or a relevant life process of the micro-organisms
- recognised the significance of oxygen and therefore aerobic respiration in the process of sewage treatment
- applied their knowledge to the given context, rather than simply regurgitating a learned answer.

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence typically:

- demonstrated understanding of the process of canning by linking it to either food safety/storage and a relevant life process of the micro-organisms
- wrote comprehensive answers that addressed all of the question in an integrated way, rather than simply addressing each bullet point in term without any connections between them
- gave answers that showed comprehensive understanding of the links between micro-organisms and their life processes and environment
- wrote clearly and concisely, without ambiguity or contradiction
- demonstrated an ability to comprehensively compare and contrast (for example aerobic and anaerobic respiration in relation to oxygen levels in Q3 or the reproduction and/or feeding of bacteria and fungi in Q1).

90928 Demonstrate understanding of biological ideas relating to the life cycle of flowering plants

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They typically:

- stated the number of parents required for sexual and asexual reproduction
- described the time and energy requirements of sexual and asexual reproduction
- outlined the role of gametes in pollination
- identified genetic variation as an outcome
- described that variation was achieved by sexual reproduction, but not asexual
- demonstrated understanding of dispersal techniques of seeds
- listed the three environmental conditions for germination (warmth, moisture, oxygen)
- described the locations of primary and secondary growth
- described the processes of primary and secondary growth
- knew the required conditions for seed germination
- described direction of growth produced by primary and secondary growth
- named the plant structures involved in primary or secondary growth
- described the functions of a number of parts of the leaf
- identified the location of chloroplasts in the palisade mesophyll
- recognised that gases move through stomata
- identified the role of air spaces in the spongy mesophyll
- wrote complete word equation for photosynthesis.

NOT ACHIEVED

Candidates who were assessed as Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They typically:

- mistook pollination for seed dispersal
- confused self-pollination and asexual reproduction
- limited their description to a plant unrelated to the question (e.g. strawberries)
- lacked descriptions of the processes of sexual and asexual reproduction
- omitted one or two environmental conditions required for germination
- replaced environmental conditions for germination with requirements for photosynthesis
- confused primary growth with germination and secondary growth with primary growth after germination
- confused primary growth with radicle emergence and secondary growth with plumule emergence
- identified carbon dioxide, soil, and light/sunshine as requirements for seed germination
- confused the process of primary growth with seed germination
- used terms of breathing and photosynthesis where respiration was required
- wrote that the waxy cuticle's role was to keep water out of the leaf
- described the upper epidermis or cuticle as the main site of photosynthesis
- described plant adaptations unrelated to leaf structure.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit typically:

- explained how variation is achieved by sexual reproduction
- explained how dispersal of seeds reduces competition
- demonstrated understanding of how variation benefits a population (not individual)
- explained tissue specialisation as part of primary growth
- detailed explanation of how root hair development allowed greater uptake of water and nutrients
- connected the plant development with increased growth and survival potential
- explained the importance of the environmental conditions to germination
- explained the importance of primary growth to obtaining requirements for photosynthesis
- explained the importance of secondary growth to obtaining strength or improved transport in the stem
- identified location of chloroplasts around the edge of the cell
- explained cytoplasmic streaming
- linked turgor pressure in guard cells to gas exchange through stomata
- identified differences between transpiration and photosynthesis.

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence typically:

- discussed selective advantages of genetic variation to the population and species
- linked seed adaptations to potential dispersal distance and competitive advantage achieved
- compared costs and benefits of connected runners growing close to the parent plant
- discussed the benefits of asexual reproduction to growers
- linked the processes and structures involved in each type of reproduction to the advantages and disadvantages of each
- discussed with great detail how primary and secondary growth occurred at a cellular level
- discussed the importance of primary and secondary growth to the continued growth and reproduction of the plant
- justified benefits of secondary growth in terms of nutrient transport and stability
- linked xylem and phloem development to the process of photosynthesis and growth
- evaluated how primary and secondary growth processes were connected and necessary for successful plant growth and expansion
- related relevant leaf structures to supply and demand of photosynthesis reactants
- discussed rates of diffusion for gases involved in photosynthesis
- discussed change in leaf function in different environmental conditions (hot, dry etc.)
- compared interactions between specific leaf layers
- showed clarity of purpose – answer remained relevant to question with a logical, planned structure.

90929 Demonstrate understanding of biological ideas relating to a mammal as a consumer

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They typically:

- stated the basic structural differences (e.g. size and /or length) of the rabbit's and dog's caecum and large intestine
- understood that the diet of an organism had an effect on the mammal's adaptations
- described the function of basic parts of the digestive system, how villi absorb digestive nutrients and could recall the pH of different parts of the digestive system
- gave details of only one of the organisms when asked to compare things (i.e. did not make a full comparison between the two animals)
- recalled basic facts but did not go on to relate structure's / shape / position / pH etc to its function.

NOT ACHIEVED

Candidates who were assessed as Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They typically:

- were unable to identify the key concepts being asked for in the question
- stated that the enzyme has a pH rather than relate pH to the environment that enzymes work in
- did not use the resources / diagrams provided in the questions
- did not interpret the diagrams correctly
- did not use the bullet points as a guide to focus on the question.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit typically:

- demonstrated knowledge of basic facts about adaptations and explained how these adaptations help the organism carry out their specific function. e.g. they understood that the diet of an organism had an effect on the mammals' adaptations stating that a rabbit has a large caecum because grass / cellulose is tough and hard to digest and needed to be large to house the bacteria which digest this cellulose, or that the villi in the small intestine is folded to increase the surface area so that maximum soluble nutrients can be absorbed into the capillary
- showed knowledge of the pH of a part of the digestive system and explained why pH is important but failed to explain what happens to an enzyme's action as it moves from one part of the digestive system to the next
- made simple comparisons between organs and linked organs to their function
- used the bullet points well and often ticked them off when they had completed them. But often failed to go on and link their answer to the bigger question being asked.

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence typically:

- demonstrated an in-depth understanding of how structure and function are connected and how these are important to achieve greater efficiency
- demonstrated understanding of basic facts and were able to link many ideas together in a logical and concise manner
- used the bullet points to help guide them in their answers but also linked their answer to the overall question
- wrote answers that were planned and organised in a logical way, using correct terms resulting in a comprehensive response.

OTHER COMMENTS

It is very important that candidates read the questions and ensure that they only write about what is being asked for in the question. This means they not only need to address all bullet points within their answer but refer back to the bigger question or the main stem.

It is important that if a question asks for a comparison between two organisms or parts of a digestive system, then both organisms/parts of the digestive system must be addressed in their response.