-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **7310133** **-Session-1993-94**
-Superclass- **RH**

-Title- **THE HUMAN BODY**

-DESCRIPTION-

Purpose

This module provides an introduction to the structure and functions of the human body.

The module would be suitable for inclusion in an introductory programme in biology or human biology. It could be offered in conjunction with other Stage 1 Biology or Science modules. The module could also be used as a general interest module in a variety of programmes.

Preferred Entry Level

No formal entry requirements.

Outcomes

The candidate should:

1. describe the functions of body systems;
2. perform experiments related to body functions;
3. investigate the functions of a body system.

Assessment Procedures

Acceptable performance in this module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.

The following abbreviations are used below:

PC Performance Criteria
IA Instrument of Assessment

Note: The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

OUTCOME 1 DESCRIBE THE FUNCTIONS OF BODY SYSTEMS

PCs

(a) The identification of the principal organs of given body systems is correct.

(b) The description of body processes is correct in terms of the function of both organs and systems.

IA Objective Questions

24 objective questions to assess the candidate's ability to describe the functions of body systems under closed book conditions.

The questions should be allocated as follows:

(a) 8 completion questions, 1 of each of the following systems:

(i) skeletal;
(ii) breathing;
(iii) circulatory;
(iv) digestive;
(v) excretory;
(vi) nervous;
(vii) endocrine;
(viii) reproduction.

Candidates will be required to identify 3 organs in each system.

(b) 16 questions, 2 on each of the following body processes:

(i) movement;
(ii) gas exchange;
(iii) transport;
(iv) digestion and assimilation of food;
(v) removal of waste;
(vi) response to change;
(vii) reproduction;
(viii) obtaining energy

Satisfactory achievement of the Outcome will be demonstrated by the candidate correctly identifying 2 or more of the 3 organs for each body system for Performance Criterion (a). For Performance Criterion (b) the candidate should give at least 12 correct responses from the 16 questions. At least 1 correct response should come from each of the processes (i) to (viii).

OUTCOME 2 **PERFORM EXPERIMENTS RELATED TO BODY FUNCTIONS**

PCs

(a) The preparation for an experimental procedure is in accordance with given specification.
(b) The experimental procedures carried out are correct and safe.
(c) The recorded results are in an appropriate format.
(d) The interpretation of results is correct with respect to the identification of factors affecting the experiment.
(e) The conclusions drawn are valid.

IA Assignments

2 assignments to assess the candidate's ability to perform experiments related to body functions.

The candidate will be required to carry out 1 experiment related to body functions within each assignment.

A checklist should be devised to ensure a reliable interpretation of the candidate's practical performance for Performance Criteria (a) and (b).

The candidate will be required to present evidence for each experiment for Performance Criteria (c) to (e).

Satisfactory achievement of the Outcome will be based on the candidate attaining ALL the Performance Criteria in BOTH assignments.

OUTCOME 3 **INVESTIGATE THE FUNCTIONS OF A BODY SYSTEM**

PCs

(a) The extraction of key points from a variety of sources is correct.
(b) The collation of the relevant information is complete.
(c) The presentation of the information is accurate and appropriate to the body system.

IA Project

A project to assess the candidates ability to investigate the functions of a body system.

The project will consist of a folio of work containing information in a variety of forms. These should include the production of at least 1 graph, 1 diagram, 1 table and 1 bibliography. The folio of work should also include a report of at least 1000 words.

Satisfactory achievement of the Outcome will be demonstrated by the full and correct completion of all aspects of the project.

The following sections of the descriptor are offered as guidance.
They are not mandatory.

CONTENT/CONTEXT

Corresponding to Outcomes 1-3:

Definition of an organ for the purposes of this module is any structure containing more than one tissue.

OUTCOME 1

Skeletal System

Principle organs of this system should be restricted to the naming of different bones e.g. clavicle, cranium, scapula, mandible, tibia, sternum, carpals, metacarpals. This is by no means an exhaustive list but gives an indication of the level required.

Breathing System

Principal organs to include nose, trachea, bronchus, bronchioles, alveoli, lungs, intercostal muscles, diaphragm, ribs.

Circulatory System

Principal organs to include, heart and names of major arteries and veins. The lymphatic system should be discussed as an overflow system but may be more appropriately assessed under Performance Criterion (b).

Digestive System

Principal organs of the alimentary canal to include e.g. oesophagus, duodenum, colon. Associated organs such as the liver and pancreas could also be included. This again is by no means an exhaustive list but gives an indication of the level required.

Excretory System

The urinary system - kidney, ureter, bladder, urethra;
the skin and the lungs.

Nervous System

Principal organs to include regions of brain such as cerebellum, cerebrum, medulla oblongata, hypothalamus, spinal cord, nerves, sense organs e.g. eye, ear, nose, tongue.

Endocrine System

Principal organs to include pituitary, thyroid, pancreas, adrenal, ovary, testis.

Reproduction Systems

Male reproductive organs e.g. testis, penis, scrotum, urethra, epididymus, sperm duct;
Female reproductive organs, e.g. ovary, oviduct, uterus, vagina.

Movement

Action of antagonistic muscle pairs, levers, points of origin and insertion, and joints as appropriate. This could be exemplified by the movement of the arm.

Gas Exchange

Provision of large surface area, inspiration, expiration, diffusion of gases across alveolar wall.

Transport

Heart and arteries as pumps. Blood as the transport medium. Veins and lymphatics as returning vessel.

Digestion and Assimilation of food

The discussion of food should refer to carbohydrates, proteins and fats and their simple breakdown products. Mechanical and Chemical breakdown of food to include the principal of enzyme action. Specific enzyme names are not necessary at this level. Assimilation of food - function of villi in relation to absorption and increased surface area, immediate destination of food products. Assimilation of vitamins and minerals should also be included.

Removal of Waste

Kidney functions to include filtration and selective reabsorption in the removal of salt and water. Skin removal of heat. Lungs removal of CO_2.

Response to change

Examples could include the body's response to changes in light, temperature, sound, blood sugar concentration, blood water concentration, blood salt concentration.

Reproduction

Gamete production, copulation, fertilisation, implantation, gestation, birth.

Obtaining Energy

Need for energy for body processes. Digestive system and breathing system provide raw materials, circulatory system transports raw materials to and waste products away from cells.

OUTCOME 2

Suggested experiments could include:

Qualitative comparisons of inhaled and exhaled air.

Effects of exercise on breathing rate.

Tidal Volume comparisons.

Spirometry.

Effect of exercise on pulse rates.

Enzyme experiments on digestion.

"Model Gut" Experiment with visking tubing.

Composition analysis of artificial urine.

Reaction times.

Sensitivity of different area of the skin.

OUTCOME 3

Candidates should be encouraged to pursue their own interest in relation to the human body. The project could cover any aspect of any body system. Investigations can include malfunction(s) or disease as well as normal operations of the chosen system.

SUGGESTED LEARNING AND TEACHING APPROACHES

During the work of the module candidates should have several opportunities to demonstrate their practical and research skills. Each candidate should be assessed at appropriate points throughout the module. The outcomes may be taught in an integrated way ensuring that each Outcome can be identified for assessment purposes.

A candidate centred, resource-based approach is likely to be the most suitable for this module. Use of visual aids such as models and videos is recommended. An integrated approach is essential to develop a holistic view of the functioning of the human body.

The module can be run in conjunction with other Stage 1 Biology modules.

Where a candidate is unsuccessful in achieving an Outcome, provision should be made for remediation and reassessment.