2023 VCE VET Health external assessment report

General comments

The 2023 VCE VET Health examination provided students with an opportunity to demonstrate their knowledge and understanding of two units of competency within the VCE VET Health program:

* HLTAAP001 Recognise healthy body systems.
* BSBMED301 Interpret and apply medical terminology appropriately.

Students were able to successfully identify body parts and structures from diagrams when word lists were provided (Section B, Question 17). Students were also able to correctly identify medical terms when word lists were made available (Section B, Questions 10 and 11). Students are, however, encouraged to learn both anatomical structures and medical terminology independently of a word list, not only for their benefit professionally, but also to enhance academic performance in higher-order questions.

Most students performed well in questions regarding maintaining confidentiality (Section B, Question 8) and how to support patients to understand medical terminology (Section C, Case Study 2, Question 10). Most students provided responses that indicated that they had thought about an appropriate course of action specifically for the described case study. Additionally, questions requiring students to provide examples of how to improve the healthy functioning of a body system were answered relatively well (Section C, Case Study 1, Question 3). Overall, students could articulate that strategies such as healthy eating, hydration, sleep, and various other factors support healthy body functioning. Higher-performing students ensured their responses were relevant to the case study.

In general, students were able to break down simple medical terms into prefix, word root, combining vowel and suffix (Section B, Question 18), but fewer could accurately do so with less common medical terms. Furthermore, most students struggled to provide an accurate definition of the terms provided. Additionally, students were able to correctly use and apply medical terminology when the terms provided were common ones such as ‘gastr/o’; however, most students were unable to do this when the complexity of the words increased (Section C, Case Study 2, Question 5).

Many students struggled to discuss the function of the pupil and the iris in vision, the role of lymph nodes, the mechanism for carbon dioxide removal in the body, and the role of the circulatory system in promoting wound healing (Section B, Questions 1, 3, 15b.; Section C, Case Study 1, Question 2b.). Additionally, students struggled to explain the relationships between specific body systems to maintain physiological functions (Section C, Case Study 1, Question 4; Section C, Case Study 1, Question 8). When learning the physiology of each system, students are encouraged to look for relationships between systems. This is a more complex task and requires students to establish a detailed understanding of the functions of each system first, before being able to identify trends with other systems.

Finally, spelling is an area for improvement, particularly when defining medical terms and abbreviations. Students were more successful at recognising correct spelling (Section B, Question 16) than at recalling correct spelling (Section B, Question 2 & 13; Section C, Case Study 1, Question 1). Correct spelling is an important industry expectation for patient safety. Students are encouraged to develop strategies to spell correctly, for example sounding out the words phonetically. Additionally, students should be very careful when answering questions where the spelling is provided (Section B, Question 4) and ensure they copy the terms exactly into their responses to avoid losing marks.

Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses. Responses included are not student responses.

The statistics in this report may be subject to rounding, resulting in a total of more or less than 100 per cent.

Section A – Multiple-choice questions

The following table indicates the percentage of students who chose each option.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Question | Correct Answer | % A | % B | % C | % D | Comments |
| 1 | D | 2 | 4 | 4 | **90** |  |
| 2 | C | 0 | 8 | **90** | 1 |  |
| 3 | A | **77** | 14 | 5 | 3 |  |
| 4 | C | 11 | 5 | **67** | 17 |  |
| 5 | D | 2 | 33 | 1 | **65** | Option D was correct as the prefix ‘dys-’ means ‘difficult’. Students who chose Option B were unable to distinguish dys- as a prefix from ‘a-’, meaning ‘without or the absence of’ (menstruation).  |
| 6 | C | 12 | 45 | **37** | 6 | Option C was correct as ‘-blast’ as a suffix refers to ‘immature cell’ or ‘germ cell’, thus giving osteoblasts, which form new bone, their name. This question relied on students’ understanding of suffixes, or an understanding of the function of osteoblasts in comparison to osteoclasts, which destroy bone cells.  |
| 7 | B | 24 | **53** | 16 | 6 | This question required students to have a basic understanding of the blood flow through the heart. Students who incorrectly selected B failed to acknowledge that the pulmonary artery transports blood away from the heart to the lungs and the pulmonary vein transports blood back towards the heart.  |
| 8 | A | **48** | 32 | 14 | 6 | Increased peripheral resistance usually occurs in the arteries when blood pressure is consistently high, often due to sustained vasoconstriction of the arteries, leading to increased pressure against the walls of the arteries. Sustained high blood pressure also causes endothelial dysfunction, leading to impaired vasodilation and decreased vasoconstriction, compounding the problem.  |
| 9 | B | 4 | **86** | 7 | 3 |  |
| 10 | A | **49** | 21 | 7 | 23 | The mitochondria are responsible for cellular respiration, producing Adenosine Triphosphate (ATP), which is the primary energy current of the cells. Students should ensure they develop a deep understanding of the functions of the organelles within cells and to avoid rote learning catchphrases such as ‘the powerhouse of the cell’, unless they understand variations of how this function can be explained. |
| 11 | C | 18 | 18 | **55** | 10 | This question measured students’ ability to apply their understanding of locational terms as well as their understanding of the location of the various organs in relation to the thymus. Students selecting options other than C either did not know the location of the thymus or were unable to understand the meaning of the terms ‘posterior’, ‘anterior’, ‘superior’ and ‘inferior’.  |
| 12 | D | 2 | 13 | 5 | **80** |  |
| 13 | C | 1 | 3 | **96** | 1 |  |
| 14 | A | **66** | 11 | 9 | 14 |  |
| 15 | B | 42 | **42** | 10 | 6 | This question measured students’ understanding of anatomical planes. Option B is correct, as the sagittal plane divides the body into the left and right halves. Those selecting A were incorrect, as the transverse plane divides the body into superior and inferior sections.  |
| 16 | B | 11 | **60** | 25 | 4 |  |
| 17 | D | 3 | 16 | 9 | **71** |  |
| 18 | B | 1 | **97** | 1 | 1 |  |
| 19 | D | 9 | 10 | 27 | **54** | This question tested students’ understanding of plural and singular variations of medical terms. The correct answer is D, as the grammatical rule for singular words ending in ‘-on’ is to drop the ‘-on’ and add ‘-a’, forming ganglia. |
| 20 | B | 7 | **86** | 5 | 2 |  |

Section B

Question 1a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 58 | 42 | 0.4 |

Acceptable answers for this question included:

* The pupil allows light to enter the eye.
* The pupil regulates the amount of light entering the eye.
* The pupil protects the retina from damage or over-exposure to light.

Lower-scoring responses were too general – for example, discussing light without articulating that the pupil allows it to enter the eye.

Any response stating that the pupil improves vision quality also needed to explain that this is due to the regulation of light levels into the eye.

Question 1b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 66 | 18 | 16 | 0.5 |

Students were awarded one mark for stating the function of the iris and one mark for outlining how its function impacts light levels entering the eye.

Acceptable answers for the function of the iris included:

* The iris contracts and relaxes.
* The iris changes size.
* The iris constricts and dilates the pupil (best answer).

Acceptable answers for the second mark – the impact on levels of light entering the eye – included:

* To adjust the amount of light that enters the pupil or the eye.
* To control or allow for vision in different light conditions.
* To dilate the pupil in low-light conditions to allow more light to enter the eye.
* To constrict the pupil in bright-light conditions to reduce the amount of light entering the eye.

This question was challenging for many students as they were unable to link the function of the iris to the consequential levels of light entering the eye. Lower-scoring responses included incorrectly stating that the iris has a role in colour perception due to the ring of muscles being coloured, and some students being unable to accurately articulate the meaning of ‘dilate’ and ‘constrict’ and instead using terms such as ‘grow’. Some students confused the terms ‘constricts’ and ‘contracts’, therefore incorrectly stating that the iris ‘constricts’, whereas it ‘contracts’.

Question 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | Average |
| % | 5 | 13 | 28 | 54 | 2.3 |

This question required students to list three male reproductive organs. Acceptable organs included the prostate gland, testes, scrotum, penis, vas deferens, seminal vesicles, bulbourethral glands, epididymis, ejaculatory ducts, or urethra. Most students were able to answer this question correctly or were able to identify at least two structures accurately. The most common mistakes included listing sperm as an organ or using common colloquial terms. Students should use correct anatomical terms when listing organs.

Question 3

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 81 | 19 | 0.2 |

Acceptable responses that sufficiently articulated the function of the lymph nodes included any of the following:

* to filter lymph or lymph fluid
* to destroy pathogens, bacteria, waste or damaged cells
* where T-Helper cells are activated
* houses T-Helper cells, which will identify non-self antigens
* where B-cells are activated
* where B cells produce antibodies that will assist in destroying pathogens
* where antigen presenting cells will carry antigens and present to T or B cell for activation.

Some students answered this question well, providing complex responses that went beyond the scope of the question, and demonstrating an outstanding knowledge of lymph node function. Some lower-scoring responses stated that the lymph nodes filter blood. Students should note that lymph nodes filter lymph, not blood.

Question 4

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | 4 | Average |
| % | 9 | 26 | 33 | 12 | 20 | 2.1 |

|  |  |
| --- | --- |
| Medical Term | Solution(s) |
| histology | the study of tissues |
| gerontology | the study of ageing |
| otology | the study of all conditions relating to the ear |
| gynaecology | the study of the female reproductive system |

This question proved challenging for some students, who were unable to identify the key word roots to correctly identify the appropriate definition. Most students were able to identify that gynaecology is the study of the female reproductive system, and most were able to identify that otology is the study of all conditions relating to the ear.

The most common errors included:

* Confusing histology and gerontology, which may be a result of confusing the word root ‘hist’ (tissue) for meaning ‘history’.
* Incorrectly identifying otology as the study of the urinary system.
* Misspelling the definitions. Students should be very careful to spell any provided definitions correctly, as no marks were awarded to students who made spelling errors when the correct terms were provided. This includes American English spelling, for example, ‘aging’ instead of ‘ageing’.

Question 5

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 23 | 77 | 0.8 |

This question required students to identify that ‘melatonin’ is the hormone secreted from the pineal gland to promote sleep. This question was generally answered well by students. If students misspelled melatonin, the marks were still awarded provided the spelling did not change the meaning of the word or make it undistinguishable from another word.

The most common errors included students listing ‘melanin’ or ‘serotonin’.

Question 6a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 54 | 46 | 0.5 |

This question was generally answered well. Most students were able to identify that ‘keratin’ is the protein that forms nails. If students misspelled keratin, the marks were still awarded provided their spelling did not change the meaning of the word or make it undistinguishable from another word.

Marks weren’t awarded when misspelling made it too difficult to distinguish keratin, such as ‘carotene’ and ‘creatine’.

Question 6b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 2 | 48 | 50 | 1.5 |

Most students were able to access at least one mark for this question, but many students struggled to provide responses that would be awarded the full two marks. Acceptable responses included any **two** of the following:

* Checklists ensure that all tasks are completed or that nothing is forgotten.
* Checklists improve productivity or ensure time isn’t wasted.
* Checklists ensure consistency is maintained between different workers.
* Checklists ensure that the correct equipment or materials are available for the procedure.
* Checklists ensure that all infection control measures are upheld.
* Checklists allow a record to be kept of what tasks have been completed.

Alternatively, if students listed one of the items above and provided an appropriate justification, this was also awarded two marks. For example, ‘Checklists ensure that you don’t miss any crucial set-up tasks that could result in client harm or harm to yourself.*’*

Lower-scoring students made the same point in two different ways, for example ‘To ensure everything is completed and that nothing is forgotten’.

Question 7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 15 | 49 | 36 | 1.2 |

This question was generally answered well, with most students accessing at least half of the available marks.

Acceptable responses included any **two** of the following:

* Connective tissue (blood) transports waste, blood cells, nutrients, oxygen.
* Connective tissue (subcutaneous tissue) provides insulation or assists with thermoregulation.
* Connective tissue provides protection.
* Connective tissue provides structural support.
* Connective tissue assists with attachment of structures (e.g., ligaments connect bone to bone, or tendons connect muscle to bone).
* Connective tissue assists with tissue repair.
* Connective tissue assists with movement.
* Connective tissue permits joint flexibility.

The most common errors saw students giving the same answer twice, such as discussing that ligaments connect bone to bone and tendons connect muscle to bone, which is only alluding to the one function of attachment. Additionally, many students were unable to achieve full marks if they discussed that connective tissue *produces* movement. Students needed to specifically state that connective tissue assists with movement; muscle and nervous tissue is responsible for producing movement.

Question 8

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 14 | 86 | 0.9 |

This question was generally answered well by most students. Acceptable responses included:

* Speak in a low volume or speak softly.
* Ask patients to fill out a form rather than asking for information verbally.
* Speak to patients in a separate room or away from reception.
* Point to information to confirm it is correct rather than reading it out loud.
* Ensure patient files are promptly filed after being returned to reception.

Marks were awarded for filing of medical records because, although the stem alludes to Dora speaking to patients, the question only asks how Dora can maintain confidentiality without specifically requiring it to be about verbal confidentiality.

The most common errors included:

* Stating that Dora should move to a private room to discuss results with the patients. This showed students had confused the role of a receptionist and medical professional in the communication of medical results.
* Stating that Dora shouldn’t speak or discuss personal information with patients. This is Dora’s role.

Question 9a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 24 | 76 | 0.8 |

This question was answered well by most students. A list of possible responses to the benefits of sweating included cooling mechanism for the body, temperature regulation, thermoregulation, loss of heat, or waste secretion.

The most common error was students stating that sweating allows for a loss of excess fluid, as this is a function typically controlled by the kidneys rather than through sweating.

Question 9b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 28 | 72 | 0.8 |

This question was answered well by most students. A list of possible responses included physiological risks such as:

* dehydration, fluid loss or fluid imbalance
* electrolyte imbalance
* hypotension
* hypertension
* increased risk of skin infections due to increased moisture
* fertile ground for bacteria and subsequent infections

Additionally, students could have discussed the mental health risks to excessive sweating, including affecting quality of life, embarrassment, anxiety, depression or loss of confidence.

Question 10

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 23 | 36 | 41 | 1.2 |

|  |  |
| --- | --- |
| Solution(s) | Function of lobe |
| frontal lobe | high level / intellectual cognitive function |
| temporal lobe | hearing and speech function |

Common errors and misconceptions included:

* Students listing frontal lobe and temporal lobe, but having frontal lobe as responsible for hearing and speech formation, and the temporal lobe as responsible for high level / intellectual cognitive function.
* Many students incorrectly listed the occipital lobe as responsible for hearing and speech function.
* Students who did not spell the lobes correctly or just listed ‘frontal’ did not access the relevant mark as the answers were provided for them.

Question 11

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | Average |
| % | 3 | 15 | 29 | 53 | 2 |

|  |  |
| --- | --- |
| Definition | Solution(s) |
| space containing the majority of the digestive organs | abdominal |
| above/upon/on | epi |
| away from the midline | lateral |

Many students were able to access full marks for this question. The most common error preventing students from gaining full marks was listing ‘medial’ as the solution for ‘above/upon/on’.

Question 12a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 72 | 28 | 0.3 |

This question required students to identify the function of the diaphragm during inhalation and was generally done well by most students. Acceptable responses included listing that the diaphragm:

* contracts
* moves down
* flattens.

The most common errors included students stating that the diaphragm relaxes or domes (this is during expiration) or that the diaphragm constricts. Additionally, some students incorrectly described the diaphragm as expanding, confusing the subsequent effects on the abdominal cavity with the function of the diaphragm.

Question 12b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 41 | 59 | 0.6 |

This question required students to identify the function of the rib cage during inhalation. This proved challenging for some students, with responses tending to discuss the role of the intercostal muscles rather than the rib cage itself. Acceptable responses included:

* The rib cage pulls upward.
* The rib cages moves outward.
* The rib cage expands.

Question 13

Question 13a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 22 | 78 | 0.8 |

Emergency Department

Question 13b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 99 | 1 | 0 |

cervical or cervical spine

Question 13c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 80 | 20 | 0.2 |

chronic kidney disease

Question 13d.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 92 | 8 | 0 |

indwelling catheter

Question 13e.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 87 | 13 | 0.1 |

magnetic resonance imaging/image

This questionwas not handled well, with most students not accessing full marks. Students are required to spell medical terminology and abbreviations correctly to access marks. Students should ensure they learn the correct spelling of medical terms as it is essential for accurate and safe medical documentation in the workplace. The most common errors and misconceptions included:

* misspelling ‘emergency’ as ‘emergancy’
* incorrectly identifying Cx as ‘chest’
* being unable to identify IDC correctly
* misspelling catheter, often as ‘cathedar’
* misspelling resonance as ‘ressonance’.

Question 14

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | 4 | Average |
| % | 0 | 1 | 5 | 17 | 77 | 4 |

|  |  |
| --- | --- |
| Solution(s) | Meaning |
| hyperlipidaemia | condition of high levels of lipids in the blood |
| sternotomy | incision into the sternum  |
| hemicolectomy | surgical removal of half the colon |
| epidermis | outermost layer of the skin |

This question was answered well. Most students were able to identify the correct solutions to the definitions provided. The most common errors and misconceptions included:

* stating that ‘splenectomy’, rather than ‘sternotomy’, was an incision into the sternum.
* misspelling terms when the correct spelling had been provided.

Question 15a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 34 | 42 | 24 | 0.9 |

This question was answered well. Most students were able to identify that the respiratory system, cardiovascular system or the circulatory system enabled carbon dioxide removal from the body. The most common error was listing the urinary system.

Question 15b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 46 | 34 | 19 | 0.7 |

Students were required to identify how their chosen system removed carbon dioxide from the body. This question was generally answered poorly as many student responses discussed oxygen or nutrients rather than carbon dioxide.

*Cardiovascular/circulatory system*

For this system, students were awarded one mark for stating that carbon dioxide was transported in the blood or via haemoglobin. The second mark was awarded for linking this to the removal of carbon dioxide from the body, which was achieved through responses such as transporting it to the lungs for exhalation. Students who discussed the pH buffer system were also awarded this mark.

*Respiratory system*

For this system, students could achieve marks via two types of responses. Students who stated the passageway of carbon dioxide on exhalation, listing at least two structures, were able to access two marks. For example, ‘Carbon dioxide is removed from the respiratory system as it leaves the lungs and is exhaled out through the mouth or nasal cavity.’

Alternatively, students who discussed that carbon dioxide undergoes diffusion in the lungs and is then exhaled were also able to achieve full marks. Students who achieved full marks clearly discussed external respiration rather than internal respiration.

Question 16a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 23 | 77 | 0.8 |

This question was generally done well, with most students identifying ‘Glomerulopathy’ as the correct response. Students should be careful if circling and writing the correct response, as some students did not access full marks if the word written was incorrect, despite the circled word being the correct answer.

Question 16b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 6 | 94 | 0.9 |

This question was well done, with most students correctly identifying ‘stenosis’ as the correct alternative.

Question 17

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | Average |
| % | 2 | 17 | 29 | 53 | 2.3 |

Most students were able to identify gluteus maximus correctly.

The most common errors were:

* incorrectly identifying latissimus dorsi as the trapezium
* labelling the deltoid as latissimus dorsi and vice versa
* misspelling of words where the correct spelling was provided in the stem of the question. No marks were provided for this.
* using colloquial terms such as ‘glutes’ or ‘lats’. No marks were provided for this.

Question 18

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | 4 | Average |
| % | 12 | 42 | 25 | 13 | 8 | 1.6 |

|  |  |
| --- | --- |
|  | **Word Part** |
| **Medical term** | **Prefix** | **Root word** | **Combining vowel** | **Suffix** | **Definition of medical term** |
| mammogram |  | mamm | o | gram | X-ray/tracing/record/ recording of the breast or mammary gland |
| endotracheal | endo | trache |  | al | pertaining to within/inside the trachea |

The majority of students were able to break down ‘mammogram’ correctly, but some struggled with ‘endotracheal’. The most common error in the breakdown of ‘endotracheal’ was stating that the root word was ‘trach’ and the suffix was ‘eal’. While ‘eal’ is a suffix meaning ‘pertaining to’, ‘trach’ is not a root word for trachea.

The areas where students were not able to access full marks were in the definitions of the medical terms. Many students did not attempt this section or, when they did, they did not correctly identify the suffix for both words in their response. Additionally, many students were unable to identify that ‘endo’ means ‘within’ or ‘inside’ and instead alluded to ‘around’ or ‘outside’ the trachea in their responses.

Question 19

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 34 | 42 | 24 | 1 |

|  |  |
| --- | --- |
| Solution(s) | Meaning |
| cartilage | reduces friction between bones of the joint |
| joint capsule | surrounds the joint and connects bones in the joint |

This question was not handled well by students. Many students confused the two correct responses and had them in the reverse order. Other common misconceptions were that the bursa surrounds the joint and connects bones in the joint and that a tendon is responsible for reducing frictions between the bones of the joint.

Section C – Case Study

Case Study 1

Question 1a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 72 | 28 | 0.3 |

total knee replacement

Question 1b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 82 | 18 | 0.2 |

type 2 diabetes mellitus

Question 1c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 40 | 60 | 0.6 |

physiotherapist/physiotherapy / physical therapist / physical therapy

Question 1d.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 45 | 55 | 0.6 |

two days

This question did not produce strong responses for all components. The most common errors preventing students from accessing marks included:

* misspelling ‘mellitus’
* listing 2/7 as ‘two days ago’ or ‘two days out of one week’
* identifying PT as a ‘personal trainer’.

Question 2a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 19 | 81 | 0.8 |

This question was answered well, with most students able to identify one system that was involved in wound healing.

Acceptable responses included:

* nervous system
* immune system
* lymphatic system
* integumentary system
* respiratory system.

The most common error for this question was students providing ‘cardiovascular system’ or ‘circulatory system’ as their response, despite the question specifically asking for an alternative.

Question 2b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 21 | 34 | 45 | 1.2 |

This question was done moderately well, with most students accessing one of the two marks. However, many students struggled to gain the second mark as they were unable to link *how* the circulatory system supports wound healing.

For the first mark, students were required to identify a function of the circulatory system with regard to wound healing. Acceptable responses included:

* transporting white blood cells, oxygen, nutrients, oxygenated blood, platelets or fibrinogen
* constriction of blood vessels (linked to haemostasis in the second mark).

For the second mark, students were required to link the function of the circulatory system to the subsequent benefits to wound healing.

Acceptable responses included:

* removing waste products
* (WBCs) prevent infection
* (platelets) assist with blood clotting
* produces an inflammatory response
* delivering oxygen to tissues
* facilitating granular tissue
* facilitating tissue healing or repair
* (fibrinogen) creates a fibrin mesh
* (vasoconstriction) reduces bleeding

Question 3

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 51 | 49 | 0.5 |

This question was not handled well by many students as they had not answered it within the context of the information provided in the case study. Many students recommended that Arthur engage in regular exercise or some form of exercise when the stem clearly stated that ‘he is now unable to walk independently’.

Acceptable responses included:

* healthy eating / eating vegetables / eating fruit / balanced diet
* drink water or stay hydrated
* wound care
* monitoring his blood glucose levels
* better management of his diabetes
* getting more sleep
* regular wound care

If mentioning exercise, students needed to clearly state that it needed to be completed with a physiotherapist or give appropriate suggestion such as hydrotherapy. General responses that simply stated ‘get more exercise / implement an exercise program’ were not accepted.

Question 4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | Average |
| % | 30 | 32 | 24 | 15 | 1.2 |

This question was not answered well by most students. Students were required to explain the relationship between the musculoskeletal system and the nervous system in maintaining balance. Many did not adequately link this to the maintenance of balance and instead discussed movement.

One mark each was awarded for discussing the role of the musculoskeletal system and nervous system in balance, while another one mark was awarded for linking the two together.

Acceptable responses included:

*Musculoskeletal system*

* Provides stability and support.
* Provides coordination.
* Provides strength.
* Controls muscle tone.
* Uses muscles to correct or refine movement.

*Nervous system*

* Proprioceptors provide feedback about the position of muscles.
* The visual sensory system provides feedback about position and space.
* The semi-circular canals or vestibular system in the ear detect the position of the body.
* Motor/efferent neurons send motor signals to the muscles to refine movement.
* Sensory/afferent neurons send sensory signals to the brain about the position of the body.
* The cerebellum is responsible for refining motor movements carried out by the musculoskeletal system.

An example of a high-scoring response would be:

*The cerebellum will receive sensory information about balance and equilibrium via an afferent neural pathway from the vestibular system in the ear* ***(Nervous system)****, then it would send a neural message via a different pathway (motor) to skeletal muscles* ***(Link)*** *to maintain muscle tone* ***(Musculoskeletal)*** *and therefore maintaining balance.*

The most common errors included:

* Responses discussing movement instead of balance.
* Responses that discussed ‘messages’ rather than discussing motor or sensory signals. Students are encouraged to ensure their responses are specific to the question.

Case Study 2

Question 5

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | 4 | Average |
| % | 14 | 26 | 45 | 14 | 1 | 1.6 |

|  |  |
| --- | --- |
| Medical term | Definition |
| gastr/o | stomach  |
| -itis  | inflammation |
| -rrhoea  | (excessive) discharge/flow |
| haematemesis | vomiting blood |

This question was not answered well, with many students only accessing half of the available marks. Most students were able to identify that the definition of ‘gastr/o’ is stomach, and that the suffix ‘-itis’ refers to inflammation. However, many students were not able to correctly identify the definition for ‘-rrhoea’. Similarly, most students were unable to identify that ‘haematemesis’ is the medical term for vomiting blood.

Question 6

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | 4 | Average |
| % | 14 | 26 | 45 | 14 | 1 | 1.6 |

This question was answered well, with most students correctly identifying two strategies (other than wearing gloves) that Deborah could implement to minimise the spread of infection to her other children.

Acceptable responses included:

* Washing her and the children’s hands regularly with soap and water.
* Disposing of soiled nappies immediately.
* Wiping down the change table after use.
* Avoiding sharing toys among children.
* Keeping Noah’s soiled clothes separate to the other children’s.
* Limiting contact between Noah and the other children until symptoms have ceased.
* Avoiding sharing food among siblings.
* Deborah could wear a mask to avoid any droplets or passing any droplets on to her other children.

The most common errors included responses simply stating that Deborah should wear a mask. Masks are usually worn for airborne viruses, which gastroenteritis is not. Therefore, any discussion of masks needed to relate to the scenario. Additionally, responses that discussed how Deborah could protect herself were not accepted as the question was asking how Deborah can minimise the spread to her other children. Students are encouraged to avoid giving generic, rote-learned responses, and rather ensure that their answers are linked back to the specific case study.

Question 7a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 6 | 11 | 84 | 1.8 |

This question was completed well by most students. Students were required to provide examples of fluid intake and output that would be relevant given the context relating to Noah.

Acceptable responses for fluid intake for Noah included breastmilk, water, icy poles, other high-fluid foods. Acceptable responses for fluid output for Noah included urine, vomit, diarrhoea etc.

Question 7b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 46 | 54 | 0.6 |

This question was also completed well by most students as many were able to provide one reason why the maintenance of fluid balance is important.

Acceptable responses included:

* to prevent dehydration
* temperature regulation
* to maintain blood flow or blood volume
* to maintain healthy skin or mucous membranes
* to maintain blood pressure
* to maintain electrolyte levels
* to prevent constipation
* to maintain pH levels,

The most common errors or examples of responses that were not able to access this mark were responses that were too general, such as those stating ‘to maintain homeostasis’.

Question 8

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | 3 | Average |
| % | 51 | 27 | 17 | 6 | 0.8 |

This question was not handled well. Many students were unable to establish the relationship between the digestive and urinary systems in maintaining fluid balance. Students were awarded all three marks if they could identify a digestive function that relates to fluid balance, discuss the role of the urinary system in fluid balance, and provide some rationale for how they work together.

Examples of acceptable digestive functions relating to fluid balance include:

* Discussing that water is absorbed into the blood via the small or large intestine.

Examples of acceptable urinary functions relating to fluid balance include:

* The urinary system eliminates excess water by producing urine.
* The urinary system reduces production of urine in states of dehydration.
* Reabsorption of water occurs in the Loop of Henle (or other relevant structure).

An example of a high-scoring response would be:

*The digestive system has a role in fluid balance by absorbing water into the bloodstream via the small and large intestine. The blood is then circulated back to the heart (via the portal system and the liver) where it is then distributed to the kidneys. The kidneys and the urinary system maintain fluid balance by reabsorbing water at the Loop of Henle in cases of dehydration, or excreting water in urine to maintain optimal fluid balance.*

The most common errors included discussing the absorption of nutrients as a role of the digestive system, rather than noting that the question was relating to fluid balance. Other common errors were the misuse of the terms absorption and reabsorption.

Question 9

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 60 | 21 | 20 | 0.6 |

This question was not answered well, with many students being unable to access full marks. The question required students to identify an appropriate third line of defence response from Noah’s immune system in removing his virus.

Students were awarded the first mark for identifying a component of the third line of defence and the second mark was awarded for the justification for how it would act to remove the virus.

Acceptable responses included:

* T cells would act to destroy the viral pathogen.
* T cells would produce cytotoxins to destroy the pathogen.
* B cells would produce antibodies to target the pathogen for destruction.
* B cells would perform phagocytosis to destroy the pathogen.
* Antibodies would be produced (by B cells) that target the pathogen for destruction.

The most common errors came from students who discussed the role of inflammation, vomiting and fever. Vomiting is a response of the first line of defence and inflammation and fever of the second. Students are encouraged to ensure they know the three lines of defence and the components within each. Additionally, many students who discussed antibodies were not able to access full marks as they were not able to accurately justify how they function to remove a pathogen.

Question 10

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 13 | 87 | 0.9 |

This question was answered well. Most students were able to identify one action that the dietician could implement to improve Deborah’s understanding of verbal medical advice and terms.

Acceptable responses included:

* Use simplified language.
* Avoid medical jargon.
* Explain medical terms.
* Provide a written or visual explanation.
* Use a diagram, pictures or a poster.
* Provide a simplified brochure.
* Ask Deborah to repeat the information back to the dietician in her own words to check for understand and fill any gaps.

Lower-scoring responses included suggestions that Deborah be given a medical dictionary (not helpful or practical) or that the dietician ‘not use any medical terminology’. The latter was considered too absolute in nature, as medical information often requires the communication of medical terms, but rather they should be explained. Responses discussing how to explain the terms to Noah were not awarded any marks as Noah is only 18 months old.

Question 11a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 35 | 65 | 0.6 |

This question was answered well by students.

Acceptable responses included:

* chemical digestion
* physical breakdown or mechanical digestion of food
* breakdown of food into soluble nutrients
* regulation of the release of chyme into the small intestine/duodenum
* release of hormones that regulate appetite (e.g. Ghrelin).

The most common errors for this question included responses discussing that bile has a role in chemical digestion in the stomach. Students are encouraged to ensure they understand that bile is released directly into the small intestine.

Question 11b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks  | 0 | 1 | Average |
| % | 55 | 45 | 0.5 |

This question was not answered well. Many students were unable to accurately identify a function of the small intestine in the digestive system.

Acceptable responses included:

* absorption of nutrients
* peristaltic movements
* chemical digestion (specific examples could include protease, lipase, amylase, bile or pancreatic juice)
* through Peyer’s Patches, removal of pathogens from digested material and maintenance of normal bacterial colonies which assist with absorption.

The most common errors were responses that discussed the breakdown of food or physical digestion. Physical digestion is not accurate as only chemical digestion occurs in the small intestine. Thus, answers that simply stated ‘break down food’ were too general to be awarded this mark.

Question 12

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks  | 0 | 1 | 2 | Average |
| % | 16 | 38 | 47 | 1.3 |

This question was answered moderately well. However, many students were unable to link their responses back to the case study, or their responses were not relevant to the question. This question required students to identify two ways that Deborah could assist Noahto maintain a healthy digestive system.

Acceptable responses included:

* Provide Noah with plenty of fluids/water.
* Provide Noah with a balanced diet.
* Continue to breastfeed Noah.
* Encourage Noah to play or do an activity that promotes his movement.
* Ensure Noah follows a regular eating schedule.
* Provide Noah with a wide range of food choices.
* Wash all foods before preparing meals for Noah.
* Cook all foods for Noah thoroughly prior to consumption.

The most common errors were responses that referred to ways that Deborah could maintain the health of her *own* digestive system, without making reference to Noah. Additionally, responses that suggested that Noah should implement a regular exercise program or join a gym were not awarded any marks as this is not appropriate for an 18-month-old baby. Students are encouraged to carefully read the question and ensure that each response links their suggestion back to the case study.