2022 VCE VET Health external assessment report

General comments

The 2022 VCE VET Health examination provided students with an opportunity to demonstrate their knowledge and understanding of two units of competency in the VCE VET Health program:

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

Students were able to successfully identify body parts and structures from diagrams, particularly when the word lists with possible names of structures were provided (Section B, Question 1). Students are encouraged to develop the ability to label all body system structures independently of word lists. Students also demonstrated the ability to describe the functions of body system structures when a labelled diagram is provided (Section B, Question 10). However, this produced more variable results as students found describing the functions accurately more challenging than labelling structures. As students develop their knowledge of the body systems, they are encouraged to self-assess their ability to identify the structure from an unlabelled diagram without word lists and describe the function of each structure.

Students also demonstrated a strong ability to identify strategies to maintain healthy functioning of a range of body systems (Section C, Questions 1 and 8b.). Through these questions students were able to accurately recommend strategies such as a healthy diet, exercise, quitting smoking, personal hygiene and hydration to improve the health of respiratory and urinary systems. When answering these questions, students are encouraged to ensure they tailor their response to the specific system rather than rote learning a range of strategies to list for this style of question. For example, when discussing exercise for a healthy urinary system, students who scored highly were able to relate this to pelvic floor exercises.

Students were able to demonstrate the ability to break down medical terms accurately through identification of the prefix, root word, combining vowel and suffix (Section B, Question 9). Additionally, students were able to successfully match a definition with a correct medical term (root words, medical words, body systems) from a provided list (Section B, Questions 3, 9, 11 and 15; Section C, Questions 5 and 7). While these were done well, students are encouraged to ensure they are able to identify these terms independently of word lists and build their recall knowledge of medical terms rather than rely solely on recognition.

Students need to develop a stronger understanding of the more complex aspects of human physiology. Students struggled to accurately describe the role of anatomical structures such as the thymus, spleen, Peyer’s patches, cilia, myelin sheath and hormones such as adrenaline and glucagon (Section B, Questions 6, 8 and 13). Additionally, students must understand and be able to correctly describe the role of arteries and veins within the body (Section B, Question 7). Students are encouraged to ensure they have a strong understanding of the role of arteries and veins in both systemic and pulmonary circulations, and ensure they are not using rote-learned responses such as ‘arteries contain oxygenated blood’ as this is not correct for both circulations. It was evident from Section A, Question 20, which measured the same content knowledge, that this is an area that requires significant improvement as students struggled to recognise the correct response from a list of possible answers, indicating that their understanding of this material was limited.

Students should work on their spelling of medical terms and ensure they are familiar with the singular and plural versions of medical terms and structures. Students needed to be very careful when writing or labelling medical terms, particularly when a word list is provided. Students did not receive marks for incorrect spelling. Students are required to demonstrate correct spelling when:

* labelling anatomical diagrams
* a word list is provided in the question stimulus
* the word forms part of a medical abbreviation
* breaking down a medical term.

Finally, when answering case study questions testing knowledge of confidentiality and privacy information, students are strongly encouraged to carefully consider the context of the scenario. Students need to ensure they are very clear of the situation described in the question stimulus (e.g. keeping patient notes confidential during an exercise program) and then provide examples of how to achieve this in their responses tailored to the situation.

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.

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

Section A – Multiple-choice questions

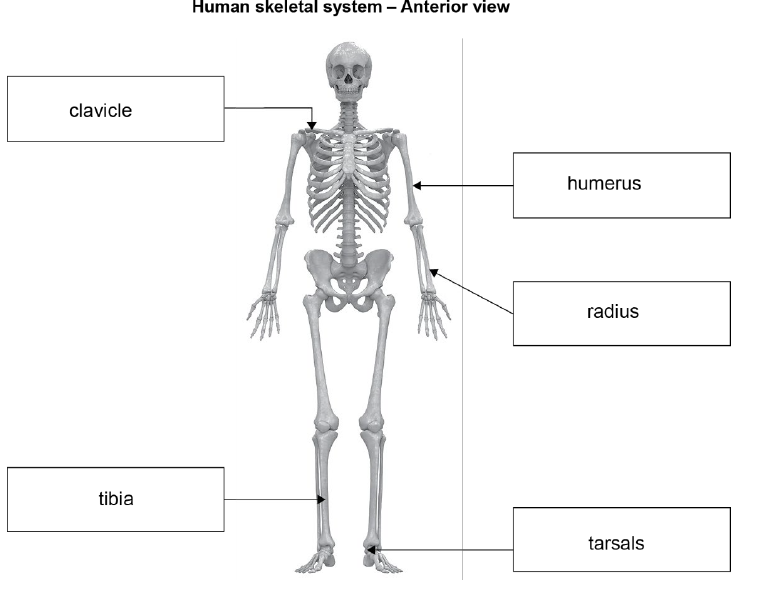
The following table indicates the percentage of students who chose each option.

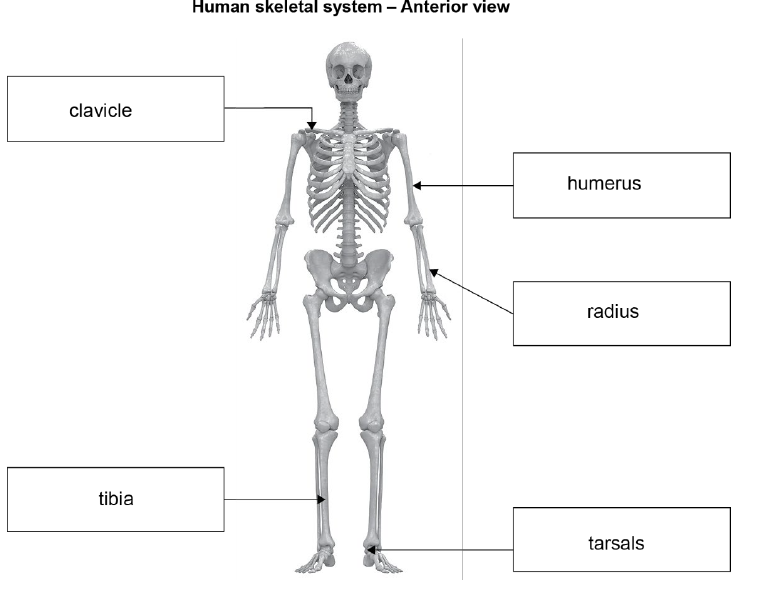
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Question | Correctanswer | % A | % B | % C | % D | Comments |
| **1** | A | **68** | 3 | 9 | 21 |  |
| **2** | C | 0 | 0 | **99** | 0 |  |
| **3** | D | 11 | 7 | 7 | **75** |  |
| **4** | D | 8 | 23 | 8 | **61** |  |
| **5** | B | 29 | **53** | 6 | 11 | Option B was correct as tears contain lysozyme, which prevents pathogenic infection and protects mucous membranes of the eyes as part of the first line of defence. Students who selected Option A, inflammation and swelling, were unable to recognise that this is part of the second line of defence. |
| **6** | C | 7 | 33 | **53** | 6 | This question measured students’ understanding of medical terms related to cellular adaptation and change. Students who selected Option B failed to differentiate between the two prefixes, where aplasia contains a- meaning without, and dysplasia contains dys- meaning difficult. |
| **7** | A | **58** | 5 | 16 | 21 |  |
| **8** | D | 18 | 18 | 22 | **41** | Goosebumps occur when the arrector pili muscles that are attached to the hair follicles contract, causing hair to protrude from the hair follicle. These muscles are under sympathetic nervous system control. Option C is incorrect as heart rate increases with sympathetic activation. |
| **9** | A | **65** | 17 | 5 | 13 |  |
| **10** | B | 23 | **71** | 5 | 0 |  |
| **11** | D | 32 | 16 | 4 | **48** | Flexion is when the angle between two bones decreases (e.g. flexing your elbow joint), whereas abduction is the movement of a whole limb away from the midline of the body. Adduction would be the movement of a whole limb towards the midline of the body. |
| **12** | D | 7 | 4 | 18 | **72** |  |
| **13** | C | 10 | 26 | **46** | 18 | The ossicles (malleus, incus and stapes) are the bones of the middle ear and amplify soundwaves through vibration from the tympanic membrane to the inner ear for auditory perception. |
| **14** | B | 21 | **54** | 12 | 13 |  |
| **15** | A | **85** | 3 | 7 | 5 |  |
| **16** | D | 15 | 36 | 9 | **39** | Bile is produced in the liver and stored in the gall bladder before emptying into the small intestine to break down fats. Students who selected Option B failed to identify that bile does not break down amino acids and that it is not present in the stomach. |
| **17** | B | 3 | **79** | 15 | 3 |  |
| **18** | A | **72** | 3 | 4 | 21 |  |
| **19** | C | 1 | 0 | **99** | 0 |  |
| **20** | B | 26 | **60** | 8 | 6 | The pulmonary veins carry oxygenated blood from the lungs to the heart. Students who selected Option A had incorrectly assumed that all arteries carry oxygenated blood, which is not the case in the pulmonary circulation. |

Section B

Question 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | 5 | Average |
| % | 7 | 10 | 9 | 12 | 17 | 45 | 3.6 |





Most students were able to identify all five structures correctly, however, many students confused the radius with the ulna and mistaking the tarsals for the phalanges. Students are encouraged to ensure they are able to label structures using correct spelling without provided word lists.

Question 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 27 | 30 | 43 | 1.2 |

Students were awarded one mark for correctly describing mechanical digestion and one mark for correctly describing chemical digestion. Responses that scored highly demonstrated an understanding of mechanical digestion by discussing factors such as:

* physical breakdown of food
* chewing or mastication
* propulsion of the stomach.

Responses that scored highly and demonstrated an understanding of chemical digestion discussed factors such as:

* the breakdown of food by enzymes, bile or hydrochloric acid in the stomach
* the breakdown of food by amylase, pepsin, trypsin, proteases or lipases.

Responses that did not score well were typically those that discussed the mouth and tongue as being responsible for mechanical digestion. Additionally, responses that discussed chemical digestion as the involvement of ‘chemicals’ to break down food were not accepted as this does not describe the chemical element of digestion. Students were also not awarded marks if they identified an enzyme and linked it to the incorrect macromolecule when describing its breakdown of food.

For example, amylase is an enzyme involved in chemical digestion of food and breaks down proteins.

Question 3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 1 | 6 | 39 | 54 | 2.5 |
| Main function | | | | | | | Body system |
| Filters the blood to remove waste and excess water | | | | | | | Urinary system |
| Supplies the blood with oxygen and removes carbon dioxide from the blood | | | | | | | Respiratory system |
| Defends the body against infection | | | | | | | Immune system |

This question required students to identify the correct body system responsible for the listed functions. Most students were able to identify that the immune system defends the body against infection. Some students struggled to identify that the respiratory system supplies the blood with oxygen and removes carbon dioxide from blood, and incorrectly identified this as a cardiovascular role. Additionally, many students struggled to identify that the urinary system filters blood to remove waste and excess water and instead stated this was a digestive role.

Question 4a.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 26 | 10 | 15 | 48 | 1.9 |

The accepted answers for this question were smooth (visceral) muscle, cardiac muscle and skeletal muscle. Students typically struggled to identify all three, but were able to identify at least one. The most common mistakes included listing specific muscles rather than the three types of muscle.

Question 4b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 47 | 53 | 0.6 |

The accepted answer for this question is skeletal muscle, which is under voluntary control. Students who scored highly in Question 4a. were typically able to answer this question correctly. The most common errors were students indicating that smooth muscle was under voluntary control or listing specific muscle groups.

Question 5

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 19 | 26 | 39 | 16 | 1.5 |

|  |  |
| --- | --- |
| Medical term in plural form | Singular form |
| scapulae | scapula |
| appendices | appendix |
| alveoli | alveolus |

Students were generally able to identify appendix as the singular form of appendices. Some students were also able to identify scapula as the singular of scapulae. However, students struggled to identify alveolus as the singular of alveoli. Students were not awarded marks if the singular forms contained incorrect spelling. This resulted in some students not being awarded marks as a common error was spelling scapula as ‘scapular’.

Question 6

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 68 | 32 | 0.3 |

Possible responses included:

* increases speed of neural transmission/impulse/message
* prevents the neural message from slowing down or being lost
* prevents the neural message being lost due to interference
* allows the neural message to be transmitted along the axon.

Most students were able to identify that the myelin sheath improves the speed of neural transmission. The most common misconception was discussing that the myelin sheath offers protection to the neuron. The question stated that ‘other than insulating nerve cells, identify one function of myelin sheath’. Insulation is a form of protection, so no marks were awarded for discussing this function. Students are encouraged to read the question carefully to ensure they are answering the question correctly.

Question 7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 44 | 36 | 20 | 0.8 |

Accepted answers included any two of the following:

* Veins contain valves, whereas arteries do not.
* Veins have thinner walls, whereas arteries have thicker walls.
* Veins carry blood towards the heart, whereas arteries carry blood away from the heart.
* Arteries contain a thicker/larger tunica media compared to veins.
* The pressure of the blood against the walls of the arteries is higher than in veins.
* Veins carry deoxygenated blood with the exception of the pulmonary veins, whereas arteries carry oxygenated blood with the exception of the pulmonary artery.

Most students were able to identify that arteries have thicker walls than veins and that veins contain valves, whereas arteries do not.

The most common errors included:

* stating that veins carry deoxygenated blood, whereas arteries carry oxygenated blood, without discussing the pulmonary artery and pulmonary veins
* stating that veins are smaller than arteries. Students needed to discuss the size of the walls of the veins compared to arteries for a more accurate and specific response
* some students did not provide two differences, but instead listed a characteristic of veins for the first point and the comparison to arteries for the second. This was only awarded one mark, as it is only describing one difference.

Question 8

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 80 | 14 | 4 | 2 | 0.3 |

This question was poorly answered, with very few students able to identify the correct functions of any of the three lymphatic structures. Students who were able to answer the question correctly were generally able to identify that the thymus is responsible for maturation of T-cell lymphocytes, however, very few students were able to identify the lymphatic function of the spleen or Peyer’s patches.

Acceptable responses for thymus included:

* where T-cell lymphocytes mature
* produces thymosin.

Acceptable responses for spleen included:

* filters/cleans/breaks down pathogens found in the blood
* contains lymphocytes / white blood cells that destroys pathogens in the blood.

Acceptable responses for Peyer’s patches included:

* destroys ingested pathogens in the small intestines
* prevents the overgrowth of bacteria in the intestine
* maintains normal levels of bacterial colonies in the intestine.

The most common errors or misconceptions included:

* stating that the thymus produces white blood cells (this is a function of the bone marrow)
* discussing that the spleen is responsible for the breakdown of old red blood cells. This is a function of the spleen, but the question specifically stated that students need to identify the lymphatic function.

Question 9

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 7 | 7 | 8 | 26 | 52 | 3.1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Medical term | Prefix | Root word | Combining vowel | Suffix |
| pericarditis | peri | card |  | itis |
| valvuloplasty |  | valvul | o | plasty |
| colonoscopy |  | colon | o | scopy |
| neuralgia |  | neur |  | algia |

This question was answered well, with most students demonstrating the ability to break each word down into its specific parts. Students were generally able to break down colonoscopy and pericarditis without errors, but had more difficulty with valvuloplasty and neuralgia.

The most common errors were:

* listing the suffix for neuralgia as ‘-ia’ (condition of), rather than ‘-algia’ (condition of pain).
* listing the root word for valvuloplasty as ‘valv-’, rather than ‘valvul-’. These students tended to leave out the ‘ul’, rather than placing it in the combining vowel or suffix columns. Once students have broken down a word, they are encouraged to ensure that all the letters of the word are accounted for in each of the boxes as a way of reviewing their answers.

Question 10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | 5 | Average |
| % | 8 | 19 | 28 | 26 | 14 | 5 | 2.4 |

This question required students to describe a function of each of the reproductive organs listed. Students typically were able to do this well with one or two organs, but many struggled to articulate the correct functions of all organs. Students are encouraged to select the words used to describe functions carefully, as many students lost marks as part of their answer was incorrect. For example, some students stated that the testes ‘produced and stored sperm’. This lost marks as the testes produce sperm, however, storage occurs in the epididymis.

Possible responses for each section are as follows.

Fallopian tube:

* site of fertilisation
* receives the oocyte from the ovary
* facilitates transport of the eggs from the ovary to the uterus.

Ovary:

* site of egg/ovum production
* responsible for maturation of egg/oocyte
* site where eggs are stored and released from
* produces female hormones (oestrogen and progesterone).

Urethra:

* facilitates transport of sperm/semen outside of the body
* facilitates transport of sperm from the vas deferens to outside of the body.

Testes:

* production of sperm
* production of male hormone (testosterone).

Vas deferens:

* transports sperm away from testes/epididymis
* transports sperm to urethra/ejaculatory duct.

Common errors and misconceptions included:

* discussing the structural elements, such as that the fallopian tube is connected to the ovary and the uterus. These responses failed to describe the function of the structure
* stating that the testes store and produce sperm
* discussing the urethra’s role in transporting urine out of the body. The question specifically asked for the reproductive (not urinary) function.

Responses that scored highly used accurate language to describe the function of each structure. For example, students who stated that the ‘fallopian tube *facilitates the transport* of eggs from the ovary to the uterus’ scored highly, as the language accurately describes the role of the structure.

Responses that did not score well used language that was technically incorrect. For example, students who stated that the ‘fallopian tube *carries* the eggs from the ovary to the uterus’ did not receive full marks, as the function of carrying a substance usually involves the physical movement of that substance (e.g. carrier proteins).

Question 11

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 1 | 2 | 10 | 27 | 60 | 3.5 |

|  |  |
| --- | --- |
| Explanation | Medical term |
| tumour of lymph tissue | lymphoma |
| inflammation of the kidney | nephritis |
| specialist who treats people with cancer | oncologist |
| surgical removal of the liver | hepatectomy |

Most students were able to identify the correct term from the list of words provided. Most students were able to identify ‘oncologist’ and ‘hepatectomy’. As the list of words were provided, marks were not awarded for words that were misspelled.

Common errors included:

* selecting ‘lymphoedema’ instead of ‘lymphoma’
* selecting ‘hepatitis’ instead of ‘nephritis’
* incorrect spelling.

Question 12

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 20 | 33 | 47 | 1.3 |

Most students were able to demonstrate a basic understanding of the role of the skin in protecting the body from infection. Many students did not achieve full marks as they did not elaborate on this role, or they discussed factors that were not relevant to protection. To gain full marks, students needed to state how the skin helps to protect from infection and then describe this process to access the second mark.

Possible responses included:

* The skin forms a barrier, preventing bacteria and pathogens from entering the body from the external environment.
* The skin covers the body and internal organs, preventing pathogens from entering the body from the external environment.
* The skin contains sebaceous glands, which release sebum that is anti-microbial in nature, this neutralises pathogens on the surface of the skin preventing them from causing infection.

Common errors included:

* discussing the layers of the skin without articulating that this provides a barrier
* discussing the structure of the skin and mentioning specific structures (sweat glands, sebaceous glands) without discussing their role in protecting from infection.

Question 13

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 24 | 20 | 25 | 19 | 12 | 1.8 |

This question was poorly answered and many students were not able to identify both the gland and the action of both adrenaline and glucagon. Students were more likely to be able to identify the gland than they were able to identify the function of each of the hormones.

The gland that produces adrenaline is the adrenal gland and the gland that produces glucagon is the pancreas.

Possible responses for the action of the hormones are as follows.

Adrenaline:

* prepares the body for the fight or flight response
* increases heart rate / blood pressure / redistribution of blood to vital organs (any correct specific physiological response to adrenaline).

Glucagon:

* increases blood glucose levels
* stimulates the conversion of glycogen to glucose.

Common errors include:

* identifying that the pituitary gland is responsible for adrenaline production
* identifying that the kidney produces glucagon
* stating that glucagon ‘maintains blood glucose levels’. Students needed to specifically state that glucagon elevates or increases blood glucose levels
* using language such as ‘sugar levels’ rather than ‘blood sugar levels’.

Question 14

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 1 | 2 | 41 | 56 | 2.5 |

This question was generally well answered by students, with most able to identify at least two correct possible responses.

The most common error was selecting ‘saecum’ instead of ‘caecum’. Most students were able to identify that ‘tendon’ and ‘tonsil’ were the correctly spelled responses.

Question 15

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | 5 | Average |
| % | 5 | 11 | 19 | 20 | 31 | 15 | 3.1 |

|  |  |
| --- | --- |
| Structure | Root word |
| mouth | stoma/ |
| blood | haema/ |
| cartilage | chondr/ |
| muscle | my/ |
| brain | encephal/ |

Most students were able to identify three to four correct root words from the list provided. Students were most able to identify ‘haema/’ as the root word for blood. Mouth was the most incorrectly answered response. As the root words were provided, students were also required to spell these word parts correctly.

The most common errors included:

* mistaking ‘gloss/’ (tongue) for ‘stoma/’ (mouth/opening)
* mistaking ‘rhin/’ (nose) for ‘chondr/’ (cartilage).

Section C – Case Study

Case Study 1

Question 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 2 | 31 | 67 | 1.7 |

This question was answered well. Most students were able to identify strategies that would help Doug maintain a healthy respiratory system.

Possible responses included:

* quit or reduce smoking
* engaging in exercise
* specific examples of light exercise that are appropriate to a patient with COPD (e.g. walking, swimming)
* eating a healthy diet
* drinking plenty of water
* breathing exercises to increase lung volume
* wearing a face mask or getting immunised to prevent infection
* avoiding exposure to airway irritants such as pollution.

Common errors included:

* giving examples of high-intensity exercise that are not appropriate for a person with COPD (e.g. running)
* discussing breathing exercises or any strategy related to Doug’s anxiety. The question specifically requested strategies that improved Doug’s respiratory health
* discussing medications (the question stated that Doug is already taking medication for his emphysema).

Question 2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | 5 | Average |
| % | 6 | 6 | 17 | 34 | 21 | 15 | 3.1 |

|  |  |
| --- | --- |
| Medical term | Accepted abbreviations |
| Twice daily | BID or B.I.D or b.i.d or bid or BD or bd |
| Blood pressure | BP |
| Past medical history | PMHx or PHx or PMH or PH |
| Biopsy | Bx |
| Short of breath | SOB |

Students were able to identify most abbreviations for the given medical terms. Students were able to provide the abbreviations for blood pressure and short of breath in most cases. Twice daily and biopsy proved to be more challenging and were the two that were most commonly missed.

Common errors included:

* using 2/24 or 12/24 to abbreviate twice daily
* listing PMx as the abbreviation for past medical history.

Question 3a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 7 | 26 | 68 | 1.6 |

A list of possible responses included:

* asking a manager/supervisor
* looking up a medical terminology dictionary/textbook
* looking up the organisational policies and procedures or accepted list of medical terms
* asking the physiotherapist
* as a nurse/health professional
* use own learned knowledge of word parts (e.g. -itis means ‘inflammation of’)
* identify the word parts and look these up.

Common errors included:

* listing that Francis should look up a medical terminology website as the question stated ‘other than medical terminology websites’
* listing ‘colleague’ or ‘another worker’. This is not specific enough as a colleague or other worker may be someone without medical training.

Question 3b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 47 | 37 | 15 | 0.7 |

Many students were unable to provide responses that clearly addressed the context outlined in the case study, providing generic responses to patient file confidentiality rather than contextualising their responses to this specific scenario. This required students to identify how they would maintain the confidentiality of the notes during the exercise program. Students are strongly encouraged to read the case studies carefully and thoroughly understand the context the question refers to.

Possible response included:

* Turn the file upside down so that the patient’s name is not visible during the session.
* Close the cover of the file when not using it during the session.
* Ensuring that the file is not visible or is away from others who are using the space during the session.
* If using an electronic file, turn the screen away so it is not visible during the session.
* Hold onto the file during the exercise program.
* If updating the file, log out after the notes have been updated rather than leaving the file open.
* If others are present during the exercise program, not discussing the notes with anyone who is not involved with the patient’s program or care.

Common errors included:

* discussing that the file should be locked or kept in a secure storage location – the file needed to be used during the exercise program and so locking it away did not show an understanding of the scenario
* answers that referred to Francis not discussing the patient’s notes with anyone outside of the patient’s care such as family and friends – these people are unlikely to be present during the exercise program and did not show an understanding of the scenario.

Question 4a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 30 | 40 | 31 | 1.0 |

This question was answered well by students.

Possible responses included:

* nose/nasal cavity
* pharynx
* larynx
* trachea
* bronchiole
* bronchus
* bronchi.

Common errors included:

* listing alveoli as containing cilia
* listing the ‘lungs’. This was too general, as the alveoli are part of the lungs and do not contain cilia
* listing oesophagus (digestive system structure).

Question 4b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 58 | 29 | 13 | 1.0 |

This question required students to describe cilia and then describe their role. Students were awarded one mark for their description of cilia as being a ‘hairlike’ structure. The second mark was awarded for discussing the role of cilia. Many students did not attempt this question.

Possible responses for the second mark included:

* trapping debris / pathogens / foreign particles from entering the lungs
* wafting / trapping debris / pathogens and removing them from the airway
* discussion of the mucociliary escalator.

Common errors included:

* discussing cilia as being ‘tiny hairs’ – they are ‘hairlike’, but not hairs
* stating that cilia are structures in the digestive system (confused with villi).

Section C – Case Study

Case Study 2

Question 5

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 8 | 18 | 29 | 35 | 10 | 2.2 |

|  |  |
| --- | --- |
| Abbreviation | Full medical term |
| UTI | Urinary tract infection |
| ADL | Aids to daily living or activities of daily living |
| U/S | Ultrasound |
| 1/52 | One week or 1 week or 1 week out of 52 weeks |

Most students were able to define the medical abbreviations. UTI and 1/52 were able to be answered by most students. Students typically struggled most with U/S and ADL. Students were required to spell the medical term(s) correctly.

Common errors included:

* 1/52 being described as one month or one year
* ‘actions’ of daily living
* urinary ‘track’ infection.

Question 6

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 16 | 36 | 27 | 21 | 1.5 |

This question proved to be challenging for many students, particularly in terms of accessing full marks. Students were generally able to explain the function of the bladder but struggled to describe the functions of the ureter and kidney.

Possible responses for each are as follows.

Ureter:

* transports/allows urine to flow from the kidney to the bladder.

Bladder:

* storage of urine
* reservoir for urine.

Kidney:

* regulates fluid balance
* filters the blood to produce urine
* produces urine
* removes excess water
* regulates pH balance
* controls blood pressure
* removes waste from the body.

Common errors included:

* not discussing that the ureter allows urine to flow from the kidney to the bladder. Students needed to discuss both structures for this mark to show an understanding of the function
* stating that the bladder stores ‘fluids’. This is not specific enough as blood and lymph are other fluids in the body
* stating that the kidney filters the blood. This question was asking for urinary functions, and the lymph nodes and spleen also filter blood, therefore students need to be specific that the kidneys filter the blood to form urine or to remove waste

Many students discussed faeces or food matter, confusing the role of the urinary and digestive systems.

Question 7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 70 | 20 | 10 | 0.4 |

|  |  |
| --- | --- |
| Medical term | Definition |
| haematuria | Abnormal condition of blood in the urine  Presence of blood in the urine  Condition of blood in the urine |
| renal | Pertaining to the kidneys |

This question was not answered well by many students as students struggled to define the suffixes for both terms. Haematuria was more successfully answered than renal.

Common errors included:

* for haematuria, stating ‘blood in the urine’ without abnormal condition of / condition of / presence of, showing a lack of understanding of the suffix
* for renal, stating ‘kidneys’ without pertaining to the kidneys without providing a definition
* for renal, making reference to the rectum or anus.

Question 8a.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 25 | 37 | 28 | 11 | 1.3 |

This question required students to describe the relationship between the nervous system and musculoskeletal system in terms of their function in the urinary system. This required students to discuss nervous system functions with relation to bladder control and musculoskeletal system functions for bladder control.

Students who scored highly were able to describe that the nervous system gains sensory feedback from the stretch receptors in the muscular walls of the bladder indicating that the bladder is filling. Motor neurons are sent from the brain (nervous system) to the muscular internal and external sphincters at the base of the bladder indicating that they need to contract to maintain bladder control.

Students who did not score well were able to discuss that the nervous system receives sensory feedback around ‘fullness’ of the bladder, but did not discuss sphincter control.

Common errors included:

* discussing muscles ‘surrounding’ the bladder relaxing and contracting rather than the sphincters
* discussing that the muscle walls of the bladder are responsible for bladder control without discussing sphincters
* discussing urination rather than maintaining bladder control
* giving general functions of the urinary system and muscular system (e.g. that the muscles are responsible for movement) rather than contextualising to urinary functions.

Question 8b.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 3 | 17 | 55 | 25 | 2.0 |

This question required students to utilise their knowledge of lifestyle factors that contribute to healthy body functioning of the urinary system. Students generally answered this question well, with many students demonstrating an understanding of a range of strategies that support a healthy urinary system.

Possible responses included any three of the following:

* drink plenty of water
* eat a healthy diet / eat a diet rich in fruit and vegetables
* maintain good hygiene such as wearing clean underwear or washing the vulva/genitals daily
* wipe front to back after going to the toilet
* urinate after sexual intercourse
* go to the toilet when necessary / don’t hold on for prolonged periods of time
* engage in pelvic floor exercises.

Common errors included:

* recommending ‘exercise’ generally. Exercises needed to be specific to the urinary system, such as pelvic floor exercises
* listing ‘eat a healthy diet’ as one recommendation, and then ‘eat lots of fruit and vegetables’ as a second recommendation. This response would have attracted one mark, only because it is the same point
* recommending that Penny ‘maintain good hygiene’ without being specific as to how. Some hygiene practices wouldn’t be supportive of a healthy urinary system (e.g. wearing deodorant) and therefore students needed to be specific in their responses
* when discussing that Penny should clean herself, many students stated that she needed to clean her ‘vagina’, which is anatomically incorrect. Students needed to discuss that she should clean her uretheral meatus (urethra was accepted), vulva or genitals.