

BTEC Level 3 National in Health and Social Care

First teaching September 2016



Sample Marked Learner Work

External Assessment

**Unit 3: Anatomy and Physiology for
Health and Social Care**

In preparation for the first teaching from September 2016 and as a part of the on-going support that we offer to our centres, we have been developing support materials to help you better understand the application of Nationals BTEC Level 3 qualification.

What is Sample Marked Learner Work (SMLW)?

The following learner work has been prepared as guidance for centres and learners. It can be used as a helpful tool when teaching and preparing for external units.

Each question explores two responses; one good response, followed by a poor response. These responses demonstrate how marks can be both attained and lost.

The SMLW includes examples of real learners' work, accompanied with examiner tips and comments based on the responses of how learners performed.

Below displays the format this booklet follows. Each question will show a learner response, followed by comments on the command verbs and the content of the question. Tips may be offered where possible.

The appendix has attached a mark scheme showing all the possible responses that perhaps were not explored in the SMLW, but can still be attained.

The red box comments on the command verbs used in the question. Command typically means; to instruct or order for something to be done. Likewise, in assessments, learners are required to answer questions, with the help of a command verb which gives them a sense of direction when answering a question.

This box may choose to highlight the command verb used and comments if the learner has successfully done this, or not.

The green box comments on the content words and phrases. Content makes reference to subject knowledge that originates from the specification. Learners are required to use subject specific knowledge to answer the questions in order to gain maximum marks.

The comments may include:

- *Any key words/phrases used in the learner's answer.*
- *Why has the learner gained x amount of marks? And why/how have they not gained any further marks?*
- *Any suggestions/ ideas regarding the structure of the answer.*
- *If the answer meets full marks- why it is a strong answer? What part of the content has been mentioned to gain these marks?*



Tips offer helpful hints that the learner may find useful. For example:

- *Recommended length of the answer*
- *Reference to the amount of marks awarded*
- *General advice for the learner when answering questions*

You will need to refer to the appropriate specification alongside these sample materials.

The link below will direct you to the AddSAMs that this SMLW refers to.

<https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Health-and-Social-Care/2016/specification-and-sample-assessments/Additional-sample-assessment-material-Unit-3-Anatomy-and-Physiology-for-Health-and-Social-Care.pdf>

Question 1 a(i)

Effective Response

1 (a) (i) State **one** role of each of the following:

2 marks

gastric sphincter
It prevents reflux

pancreas
produces insulin

One role of each of the named structures has been stated, reflux and insulin production.

Ineffective Response

1 (a) (i) State **one** role of each of the following:

2 marks

gastric sphincter
Stop food coming back.

pancreas
Makes hormone.

The learner has made a statement, but they are inaccurate and too vague for a Level 3 answer.

Question 1 a(ii)

Effective Response

(ii) Describe peristalsis.

2 marks

peristalsis is a muscular contraction that helps food to move through the digestive tract.

An accurate description of peristalsis, it is a muscular contraction (1) moving food along the digestive tract (1)

Two distinct, but linked, facts accurately describing peristalsis.

Ineffective Response

(ii) Describe peristalsis.

2 marks

Moves food through the intestines.

A statement not a description has been provided, there is insufficient detail and it is not linked to muscular contraction.

There is no attempt to describe how peristalsis works, only a generic statement about food moving through the intestines, this is incorrect.



Match the number of marks available to the number of linked points you make.

Question 1 b(i)

Effective Response

(b) (i) Explain the cause of coeliac disease.

2 marks

Coeliac disease is an immune disorder where the intestines have a reaction to gluten in food.

The learner has identified what Coeliac disease is and linked it to the cause then expanded this to an explanation of what happens when you have the condition.

Accurate identification of an immune disorder, caused by a reaction to food. The answer would have been improved by the learner stating that it is an auto-immune disease.

Ineffective Response

(b) (i) Explain the cause of coeliac disease.

2 marks

Eating food with wheat in.

There is a statement but no attempt at identification of coeliac disease or any explanation of how eating wheat can trigger a reaction. The learner should have identified that it is the gluten that causes the reaction

Question 1 b(ii)

Effective Response

(ii) Describe **one** symptom of coeliac disease.

2 marks

It causes the person to become bloated as the intestines are swollen which leads to pain and discomfort.

An accurate description of what happens to the body including two distinct linked points which directly relate to coeliac disease

Bloating identified as a symptom, then linked to causing pain and discomfort as an expansion of the bloating.

Ineffective Response

(ii) Describe **one** symptom of coeliac disease.

2 marks

You get an upset stomach.

A generic statement rather than a description offered and not linked to coeliac disease, even though this is a symptom. It is also a symptom of many other digestive conditions and so not specific enough at Level 3. The answer should refer directly to the symptoms of coeliac disease specifically, not general digestive system upsets.

Question 1 C

Effective Response

(c) State the role of the gall bladder.

1 mark

It stores bile

An accurate statement has been made

The storage of bile is identified.

Ineffective Response

(c) State the role of the gall bladder.

1 mark

Releases bile.

An inaccurate statement made

TIPS!



The learner has stated 'releases' rather than stores. The **bile duct** releases the bile into the small intestine

Question 2a

Effective Response

2 (a) Explain **two** functions of the femur. 4 marks

1. It acts as support for the body as it is where some of the major muscles attach.

2. It allows the body to move (locomotion) as there it is hinged at the knee.

Two accurate identifications with appropriate expansions. Good use of appropriate technical language such as locomotion. The role of the knees as a hinge at one end of the femur and support as a muscle attachment site are identified correctly.



Be careful about the verb you use when stating roles.

Ineffective Response

2 (a) Explain **two** functions of the femur. 4 marks

1. Lets your leg move

2. supports your leg

Two accurate identifications given but not expanded. The language is simplistic for a level three answer. Movement and support would be credited but the marks are limited due to the lack of expansion in the answers.



When explaining, always identify then expand the point. The number of expansions required is dictated by the number of marks on offer.

Question 2b

Effective Response

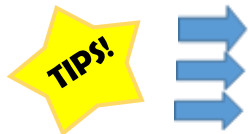
(b) Describe **one** cause and the effects of osteoporosis on the skeletal system.

6 marks

Osteoporosis is where the bones don't have enough calcium in them as it has been lost through a variety of factors. One of these could be if the person was anorexic and so was doing lots of exercise and not eating very much, especially calcium rich foods such as dairy products as they would see them as fattening. The lack of calcium makes their bones weaker and less dense which then means they are more likely to fracture or break causing the person pain.

A level 2 answer, showing some accurate knowledge of the cause of osteoporosis. This has then been applied appropriately and so linked a cause and effect of osteoporosis.

The calcium deficiency is identified, and the reasons for its loss identified. The effects of this on the body such as weaker, less dense bones leading to fractures are identified and linked.



Ensure the answer you give matches the marks on offer and the command verb in the question.

Ineffective Response

(b) Describe **one** cause and the effects of osteoporosis on the skeletal system.

6 marks

Not enough calcium so bones break easily and hurt

The link between diet and osteoporosis is identified. The effect of those factors, pain and increased chance of fractures, is linked to the identifications

A level one answer, an isolated element of knowledge identified, but lacks the application and expansion to reach the higher levels.



Lack of calcium leading to increased chance of fracture identified but not described.

Question 3a

Effective Response

3 (a) Explain the function of mitochondria.

3 marks

Mitochondria are responsible for producing and releasing energy. It does this by producing ATP from ADP, the ATP then acts as an energy store for the cell in a similar way to a battery.

An accurate identification followed by two expansion points to cover the three marks available.

Three linked points to gain all three marks.

The release of energy, by producing ATP which acts as an 'energy store'

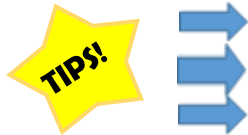
Ineffective Response

3 (a) Explain the function of mitochondria.

3 marks

Make energy

An inaccurate identification with no expansion, the answer shows a misunderstanding of the nature of energy, which cannot be made or destroyed, just changed



Energy cannot be made, it can only be changed from one form to another.

Question 3b

Effective Response

(b) Explain how proteins are produced in the cell.

4 marks

transfer RNA is in the nucleus of the cell, it matches amino acids together the proteins are then formed from the amino acids by being translated by the ribosomes in the cells cytoplasm.

There are some accurate comments although some inaccuracies as well. The order of the answer is not logical

tRNA matches amino acids to form proteins, and translation by ribosomes is the process that does this. tRNA is not found in the nucleus but positive marking allows the other points to be credited.

Ineffective Response

(b) Explain how proteins are produced in the cell.

4m

DNA tells the ribosome to make them

There is no explanation, just an inaccurate statement. Although the learner has accurately identified the ribosome as being involved there is no understanding of the process demonstrated

DNA is transcribed, this then undergoes translation. The DNA does not 'tell' ribosomes to do anything



Avoid anthropomorphisms, cells do not have human abilities.

Question 4a(i)

Effective Response

4 (a) (i) Define the term *endocrine gland*.

2 marks

An endocrine gland is one which is ductless and so releases hormones straight into the blood stream

An accurate definition including two points to match the two marks available, using 'and so' to show the link and gain the extra mark.

An accurate definition, identifying an endocrine gland as being ductless so releasing hormones directly into the bloodstream.

Ineffective Response

4 (a) (i) Define the term *endocrine gland*.

2 marks

where hormones are released.

An identification rather than a definition has been provided. A definition should identify what the endocrine is/does not just what happens there.

At level three more accuracy is required, where they are released into is not stated, and there is no other point to turn this into a two-mark definition.

TIPS!



Ensure the number of points you make match the marks available.

Question 4a(ii)

Effective Response

(ii) Identify **one** endocrine gland, other than the pancreas.

1 mark

Ovaries - produce oestrogen.

An accurate identification has been made.

Ineffective Response

(ii) Identify **one** endocrine gland, other than the pancreas.

1 mark

Liver

An inaccurate identification has been made. The liver is not an endocrine gland itself although it has a role in many body processes.

Question 4b(i)

Effective Response

(b) (i) Describe how type 1 diabetes leads to weight loss.

6 marks

Type 1 diabetes leads to weight loss because no insulin is produced in the pancreas. This means that the liver and muscles can't store sugar as glycogen and any excess is excreted from the body in urine. As a result of this, whenever energy is needed there is no glucose source and so the body has to use fat and protein instead for fuel. This reduces both fat and muscle stores through ketosis leading to weight loss.

A level three answer, showing accurate knowledge and understanding linked throughout. There is synthesis of knowledge and chains of reasoning that make the answer cohesive.

The content of the answer is accurate. The effect of lack of insulin on fat and protein metabolism is linked to weight loss through ketosis. It is clearly linked to Type 1 diabetes, rather than just 'diabetes'. The mechanism of weight loss is described

Ineffective Response

(b) (i) Describe how type 1 diabetes leads to weight loss.

6 marks

No ~~xy~~ sugar stored in the body
so no energy, so body uses fat
instead so you get skinny.

A level one answer, isolated elements of knowledge are demonstrated.

The change from sugar to fat metabolism for energy is identified but there is no expansion or description. It is not clearly linked to Type 1 diabetes and the knowledge is not cohesive.

Question 4b(ii)

Effective Response

(ii) Compare type 1 and type 2 diabetes.

4 marks

In type I diabetes no insulin is produced at all whereas in type II diabetes it is produced but the body doesn't respond to it properly or at all.
Type I is early onset, often from birth, whereas type II is late onset and often caused by lifestyle factors such as a poor diet.

Two accurate, comparative statements made addressing the command verb in the question.

The differences in insulin production and the lack of response rather than production in type II is identified. The usual age range of onset is compared accurately.

Ineffective Response

(ii) Compare type 1 and type 2 diabetes.

4 marks

No insulin made in type 1
No reaction to insulin in type 2

Two statements have been made, that are comparative but there is no attempt to compare them directly in the wording of the answer. A connective such as 'but' or 'whereas' would have improved the answer.

Although there is an attempt at comparison, there is no comment about whether insulin is made in type 2 diabetes or not.



When doing a comparison, use a comparative connective such as but or whereas.

Question 4c

Effective Response

(c) Explain the long-term effects of type 2 diabetes.

4 marks

Long term type 2 diabetes can cause blindness as the excess glucose in the blood stream can damage the capillaries in the eyes.
It can also lead to an increased chance of heart disease because the blood supply to the heart becomes reduced.

There are two long term effects identified and expanded, giving a good explanation.

Blindness due to capillary damage in the eyes and heart disease due to reduced blood supply are accurately identified, and the reasons for that damage are explained

Ineffective Response

(c) Explain the long-term effects of type 2 diabetes.

4 marks

You can get heart disease as you are overweight.

An accurate identification but an irrelevant expansion.

The increased chance of heart disease is accurate but the reference to obesity is irrelevant. Obesity is a causal factor in some kinds of type 2 diabetes, not an effect.

The question asks for effects, there is only one effect identified.

TIPS!



If a question asks for plural effects/factors make sure you put more than one.

Question 5a(i)

Effective Response

5 (a) (i) Identify **two** muscles and where they are found in the body.

4 marks

1 Arms - biceps brachii

2 Back - deltoids

Two accurate identifications and their locations in the body are identified in the answer.

This is the minimum needed for full marks, although the answer is brief the muscles are identified and linked to their locations.

Ineffective Response

5 (a) (i) Identify **two** muscles and where they are found in the body.

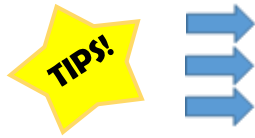
4 marks

1 biceps - arms

2 triceps - arms

Incomplete identifications given

The technical terms for the muscles are incomplete so, for instance, it is not clear which biceps are being referred to. The learner should have used the full names as listed in the specification.



When using technical language make sure you are accurate and use names in full.

Question 5a(ii)

Effective Response

(ii) Explain **two** ways muscles are attached to the body.

4 marks

1 Tendons - They attach the muscles to bones.

2 Fascia - These surround the muscle so it can attach in more than one place.

Two accurate identifications with expansions gaining full marks.

Tendons and fascia have been identified and their mode of attachment, bones and soft tissue around the muscle added as appropriate expansions.

Ineffective Response

(ii) Explain **two** ways muscles are attached to the body.

4 marks

1 Tendons - join them to bones

2 Ligaments - join them to joints.

One accurate identification, with expansions that are not specific enough.

Tendons join muscle to bone, ligaments do not. Muscles should be identified, not inferred by 'them', answers that 'stand-alone' and do not have to read in conjunction with the question, whilst not repeating the question are best.

TIPS!



Make sure that answers are specific, do not assume markers will know what you mean.

Question 5b

Effective Response

(b) Compare synovial and fibrous joints.

4 marks

Synovial joints are freely movable allowing motion in the body, fibrous joints are not, they are immovable. Synovial joints are held together by ligaments to aid their movement, fibrous joints are held together by collagen to help keep them fixed.

There are two accurate comparisons with reference to both types of joint made.

The degree of movement and the structures joining the joints are compared accurately. Synovial joints move freely, and fibrous joints are relatively immovable. Fibrous joints are held together by collagen and synovial by ligaments.

Ineffective Response

(b) Compare synovial and fibrous joints.

4 marks

Synovial don't move fibrous do

A comparison is attempted but is inaccurate, the learner has confused the two types of joints.

The response has mixed the two kinds of joint up, and only one comparison is attempted, if it had been accurate only half the marks would be available.



Ensure comparisons refer to both sides and match the number of marks on offer.

Question 5c

Effective Response

(c) Explain how body systems work together to ensure ventilation of the lungs.

8 marks

The two main body system that work together for this are the cardiovascular/respiratory and nervous system.

When the nervous system detects that the CO_2 levels in the blood are too high it sends a message to the respiratory system to act. It knows the CO_2 levels are high as it detects it in the blood brought from the muscles e.g. when we exercise and more CO_2 is produced.

A signal is sent to the respiratory system to change the shape of the diaphragm as it relaxes and contracts. Contracting causing inhalation, as the intercostal muscles raise the ribs and the volume in the thorax increases. Relaxation of the diaphragm causes exhalation as the intercostal muscles drop the ribs and the volume of the thorax decreases.

Different body systems have been referenced accurately and the interrelationships covered. There is a coherent chain of reasoning and the response is organised well.

The nervous system, cardiovascular and muscular-skeletal systems are referred to accurately and their interrelationships explained and referenced to ventilation of the lungs. A level three answer.

Ineffective Response

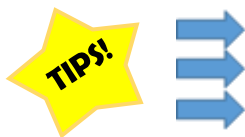
(c) Explain how body systems work together to ensure ventilation of the lungs.

8 marks

When you exercise the O_2 level goes up, this is detected in the blood and the brain tells the heart to beat faster and the lungs to breathe more to get more O_2 in and the CO_2 out.

There are isolated elements of knowledge, and an attempt to refer to relevant interrelationships. There is little attempt to develop material or link to the musculo-skeletal systems role in ventilation.

The role of CO_2 in control of ventilation is mentioned accurately, but there are no attempts to accurately link that to other body systems beyond generic comments.



Make sure answers are specific to the question and avoid generic statements where possible.

Question 6a(ii)

Effective Response

(ii) Outline how morbidity statistics are collected and used.

4 marks

GPs record what diseases and illnesses their patients have, a sample of this is taken regularly so that research can be done into the ones that occur the most.

There is also a general household survey that collects data that can also be used to find out what illnesses need research.

An outline is a short explanation, the learner has outlined a method of collection and one use of the statistics.

The collection of GP records, and their use to inform research priorities has been included.

Ineffective Response

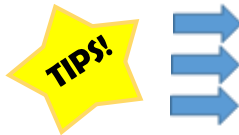
(ii) Outline how morbidity statistics are collected and used.

4 marks

GP writes it on your record what is wrong, so it can be checked.

An identification that does not answer the question, with no reference to the way the statistics are collected or used.

Although the GP has been identified, the concept that their records are collected/sampled has not been mentioned and there are no further expansions.



Make sure that answers match the question asked, if not they will gain no marks even if they are correct statements in isolation.

Question 6a(iii)

Effective Response

(iii) Explain how mortality statistics may be used to evaluate the effect of lifestyle choices.

6 marks

By knowing the mortality rates it is possible to identify the main causes of death, this can then be linked to the factors that may have caused the death/ illness to try and prevent it.

If the causes of death change over time then it can allow links to be made to lifestyle factors e.g. diet, alcohol consumption.

If the government runs a campaign to reduce certain lifestyle factors e.g. smoking they can then monitor if it is working by seeing if death rates go up or down.

An accurate identification has been expanded to a maximum six marks.

The use of mortality rates to identify prevalent causes of death, and then going on to inform public health policy and evaluate strategy by identifying causal factors has resulted in an excellent answer.

Ineffective Response

(iii) Explain how mortality statistics may be used to evaluate the effect of lifestyle choices.

6 marks

To see if campaigns like 'S a d a y' are helping to stop people dying of heart disease. If it is less death certificates will say that's why they died.

A basic identification has been made but not expanded accurately. A simplistic description of their use is included but no attempt to evaluate has been made.

Making judgements about the effect of changes in lifestyle has been identified but not expanded on, which means the extra marks can't be awarded.