



Topic Tests for OCR Cambridge Technicals (L3) in sport and physical activity

Unit 1: Body Systems and the
Effects of Physical Activity

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Teacher's Introduction

This resource is for use with the Level 3 Cambridge Technicals in Sport and Physical Activity (2016 Suite) and covers all the theory content for **Unit 1: Body systems and the effects of physical activity**.

Each topic test starts with quick, short-answer questions that ensure the core fundamental ideas of each topic are understood by the student. Questions then increase in difficulty and culminate with either long-answer questions or detailed activities which are engaging and help consolidate learning. A range of question styles has been used to expose students to different question types and to give variety, as well as providing plenty of practice with questions in an exam-style format. For example, each topic test contains visual aspects, such as diagrams and pictures, as well as more conventional short, essay-style questions.

Mark allocations and answers are provided, which are useful for peer- and self-assessment as well as providing you, as the teacher, an opportunity to assess students' strengths and weaknesses in order to inform the teaching and learning process.

Specification Reference Table

This table can be used to identify which specification points you are teaching and select the appropriate topic test to suit your needs.

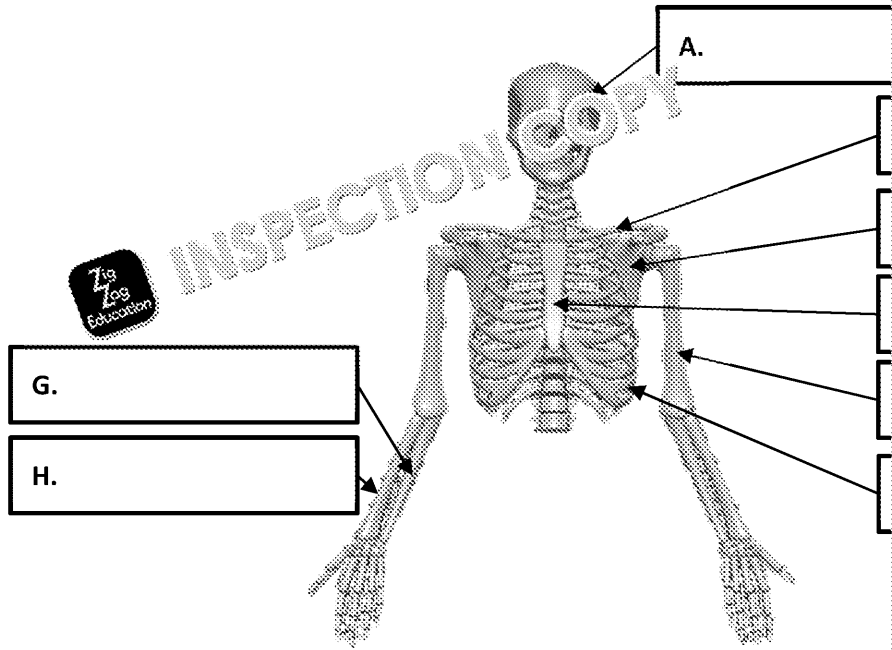
Tests are worth 30–46 marks in total and take approximately 30–50 minutes each to complete. However, some tests are slightly longer or shorter, as it was deemed appropriate to cover topics separately, to enable you to accurately test individual topic areas.

Topic Test	Title	Spec Reference	Total Marks
LO1. The skeletal system in relation to exercise and physical activity			
1.	The Skeletal System (Bone Structure and Function)	1.1–1.2	43
2.	The Skeletal System (Joints and the Vertebral Column)	1.3–1.5, 1.7	46
3.	The Skeletal System (Joint Movements)	1.6	38
4.	The Skeletal System (Short- and Long-term Effects)	1.8	32
LO2. The muscular system in relation to exercise and physical activity			
5.	The Muscular System (Structure and Fibre Types)	2.1, 2.4, 2.5	38
6.	The Muscular System (Muscle Function and Contraction Types)	2.1–2.3	36
7.	The Muscular System (Short- and Long-term Effects)	2.6	33
LO3. The cardiovascular system in relation to exercise and physical activity			
8.	The Cardiovascular System (Structure and Function)	3.1–3.4	42
9.	The Cardiovascular System (Short- and Long-term Effects)	3.5–3.6	31
LO3. The respiratory system in relation to exercise and physical activity			
10.	The Respiratory System (Structure and Function)	4.1, 4.2, 4.4, 4.5	31
11.	The Respiratory System (Short- and Long-term Effects)	4.3, 4.6	30
LO3. The different energy systems in relation to exercise and physical activity			
12.	Energy Systems	5.1–5.3	39

January 2021

I. The Skeletal System (Bone Structure and

1. i) Identify the major bones of the skeletal system labelled A–H.



ii) State which **three bones** labelled in part i) make up the axial skeleton.

- a)
- b)
- c)

iii) Phalanges are the bones that make up the fingers and toes. Name three other bones that are found in the hand and in the foot and ankle.

Hand:

Foot and ankle:

2. i) There are **five** types of bone within the human body. Explain the difference between a long bone and a short bone and give an example to support your answer.

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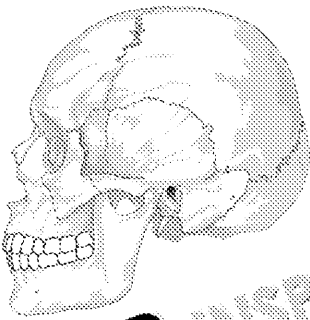
ii) Describe **two** functions of long bones when performing in sport.

.....
.....
.....
.....

iii) Describe **two** functions of short bones when performing in sport.

.....
.....
.....
.....

3. Identify the type of bone shown below and describe its importance for play



Bone type:

Description:

.....

4. Give **one** example of an irregular bone in the body and state one function of

.....
.....
.....

5. State the purpose of a sesamoid bone within a tendon and give **one** example of a human body.

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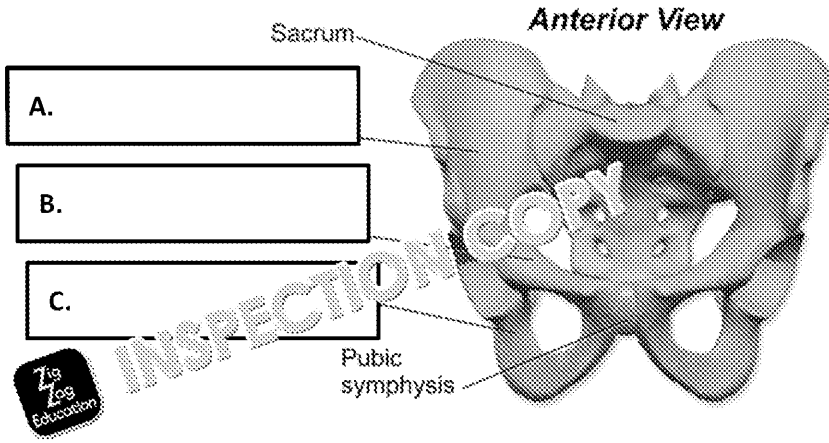


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6. Identify the bones labelled A–C on the image of the anterior view of the pelvis.



7. Explain the main functions of the skeletal system. Include the following information:

- the function and the type of bone it relates to
- examples of specific bones

A series of horizontal dotted lines provided for writing the answer to question 7.

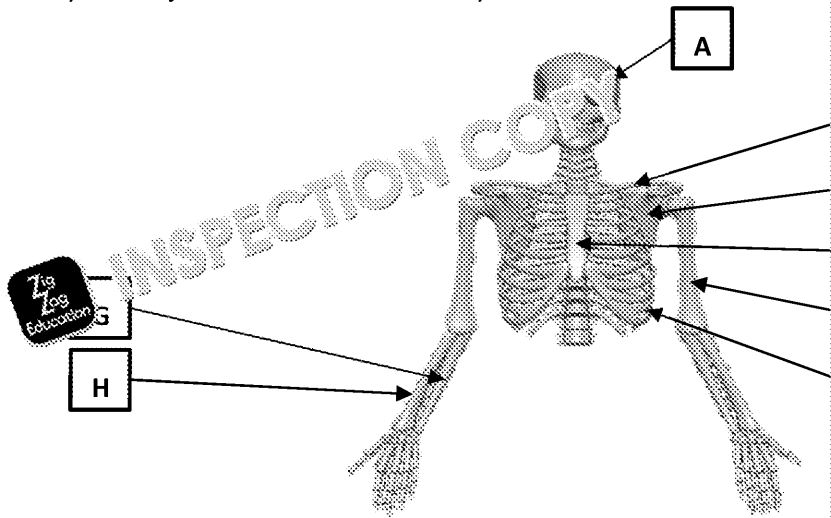
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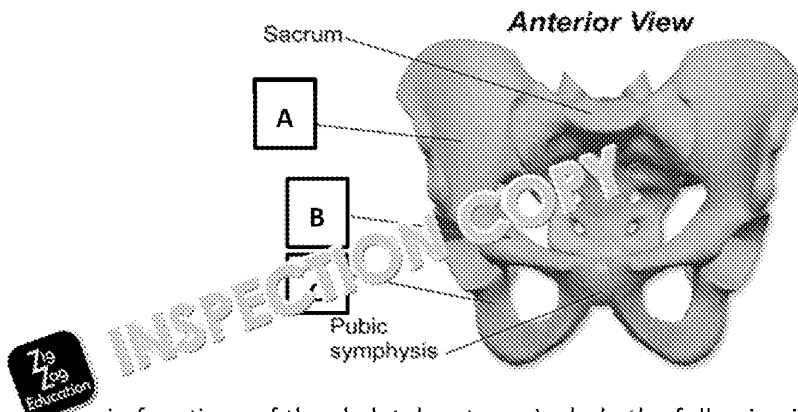


I. The Skeletal System (Bone Structure and

1. i) Identify the major bones of the skeletal system labelled A–H.



- ii) State which **three bones** labelled in part i) make up the axial skeleton.
- iii) Phalanges are the bones that make up the fingers and toes. Name the other bones that are found in the hand and in the foot and a
2. i) There are **five** types of bone within the human body. Explain the difference between a long bone and a short bone and give an example to support your answer.
- ii) Describe **two** functions of long bones when participating in sport.
- iii) Describe **two** functions of short bones when participating in sport.
3. Identify the type of bone (weight) and describe its function for playing rugby.
4. Give **one** example of an irregular bone in the body and state one function of it in sport.
5. State the purpose of a sesamoid bone within a tendon and give **one** example in the human body.
6. Identify the bones labelled A–C on the image of the anterior view of the pelvis.



7. Explain the main functions of the skeletal system. Include the following information:
- the function and the type of bone it relates to
 - examples of specific bones

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Preview of Questions Ends Here

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11. The Respiratory System (Short- and Long

1. Any three from:
 - Gradual decline in breathing frequency
 - Reduction in minute ventilation
 - Oxygen delivery maintained to repay oxygen debt
 - Gradual decline in breathing frequency
 - Reduced active transport
2. i) Any three from:
 - Increased oxygen uptake in the lungs
 - Greater carbon dioxide removal from the muscles
 - Increased oxygen delivery to the muscles
- ii) Increased strength of intercostal muscles (1) allows for greater inspiration of air (1)
Increased density of alveoli (1) increases the rate of gas exchange (1)

3.

Lung volume	During exercise
Tidal volume	Increases (1) to allow more oxygen extraction per breath
Breathing frequency	Increases (1) in response to increased levels of carbon dioxide
Minute ventilation	Increases (1) to allow increased oxygen delivery / carbon dioxide removal

4.
 - Tidal volume and breathing frequency are likely to be greater in the 400 m sprint
 - The 400 m sprint is performed at a higher intensity than the marathon
 - Therefore, the demand for oxygen at the muscles is going to be greater
 - This is achieved by increasing the amount of oxygen inhaled (i.e. by increasing tidal volume)

5. **During rest:**
 - **Inspiration**
 - Contraction of the external intercostal muscles, which pulls the ribcage up
 - The diaphragm contracts and flattens
 - The effect of these mechanisms is to increase the size of the thoracic cavity
 - This decreases the pressure inside the lungs
 - This results in inspiration as air diffuses down the pressure gradient from the atmosphere
 - **Expiration**
 - External intercostal muscles relax
 - The diaphragm relaxes into a domed position
 - The effect of these mechanisms is to decrease the size of the thoracic cavity
 - This increases the pressure inside the lungs
 - This results in expiration as air moves out of the lungs and into the atmosphere

During exercise:

- **Inspiration**
 - Skeletal muscles such as the sternocleidomastoid, scalene and pectoralis contract
 - The size of the thoracic cavity increases
 - The pressure in the lungs decreases
 - An increased volume of air can enter the lungs
- **Expiration**
 - Internal intercostal muscles and the rectus abdominis contract to assist expiration
 - There is a further reduction in the volume of the thoracic cavity
 - The pressure inside the lungs increases
 - This results in expiration as air is forced out at a greater rate

Reason for increase:

- There is a greater demand for oxygen at the muscles
- There are signals to increase the depth and rate of breathing due to increased carbon dioxide levels
- Greater inspiration allows for greater gas exchange at the lungs

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Preview of Answers Ends Here

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