Please check the examination details below before entering your candidate information

| Candidate surname | Other names |
|---|---|
| | |

Centre Number

Learner Registration Number

# Pearson BTEC Level 3 Nationals Diploma

**Time** 1 hour 30 minutes

**Paper reference** **31814H**

# Sport and Exercise Science

## UNIT 2: Functional Anatomy

**You do not need any other materials.**

Total Marks

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and learner registration number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*

## Information

- The total mark for this paper is 60.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

*Turn over* ▶

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Pearson

**Answer ALL questions. Write your answers in the spaces provided.**

**Figure 1** shows blood flow through the right side of the heart.

**1** (a) Identify the blood vessels labelled **A** and **B**.

**(2)**

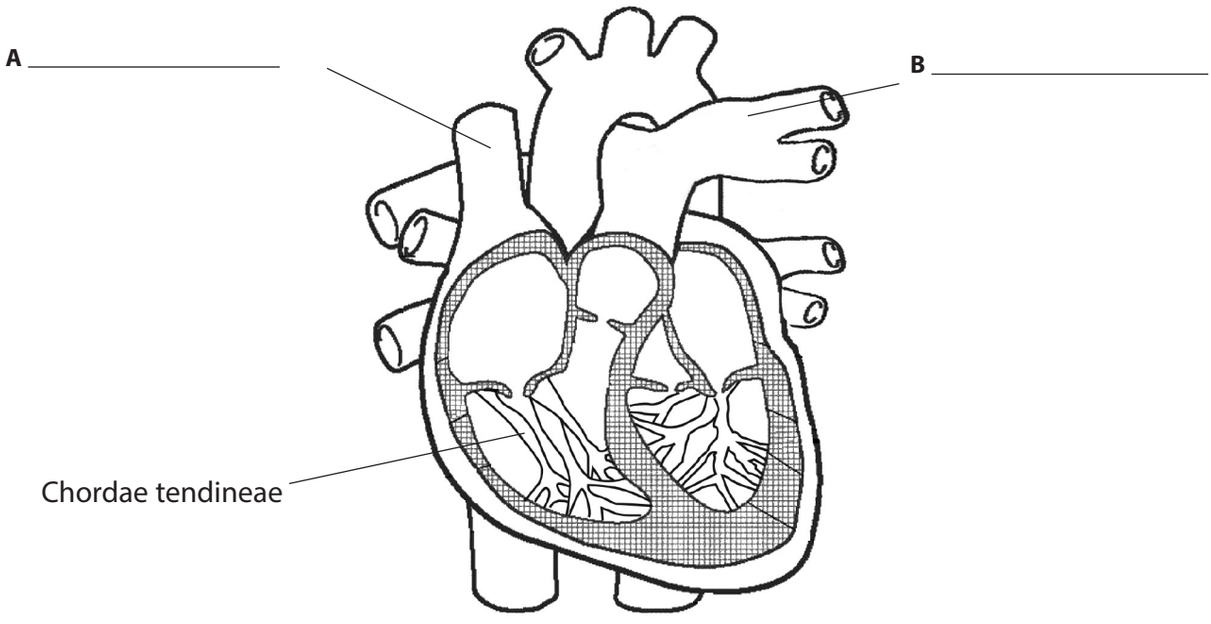


**Figure 1**

(b) State the function of the chordae tendineae.

**(1)**

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.....

.....

**(Total for Question 1 = 3 marks)**

**2** State **one** function of the following components of the respiratory system.

(a) Epiglottis

**(1)**

.....

.....

(b) Bronchus

**(1)**

.....

.....

**(Total for Question 2 = 2 marks)**

**Figure 2** shows a muscle sarcomere at rest.

**3** (a) Identify the parts of the sarcomere labelled **A** and **B** in **Figure 2**.

**(2)**

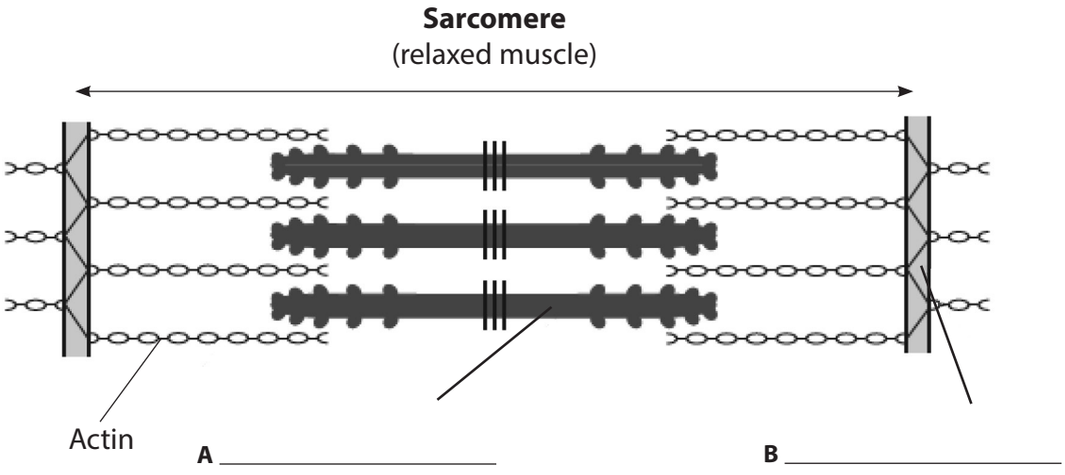


**Figure 2**

(b) Describe the role of troponin in the sarcomere during muscle contraction.

**(3)**

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**(Total for Question 3 = 5 marks)**

**4** (a) Name **two** examples of a flat bone.

**(2)**

1 .....

2 .....

(b) Describe the function of a flat bone.

**(2)**

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.....

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.....

**(Total for Question 4 = 4 marks)**

Long bones contain both compact and cancellous bone.

**5** State **two** features of cancellous bone.

1 .....

.....

2 .....

.....

**(Total for Question 5 = 2 marks)**

**Figure 3** shows an athlete performing a squat.

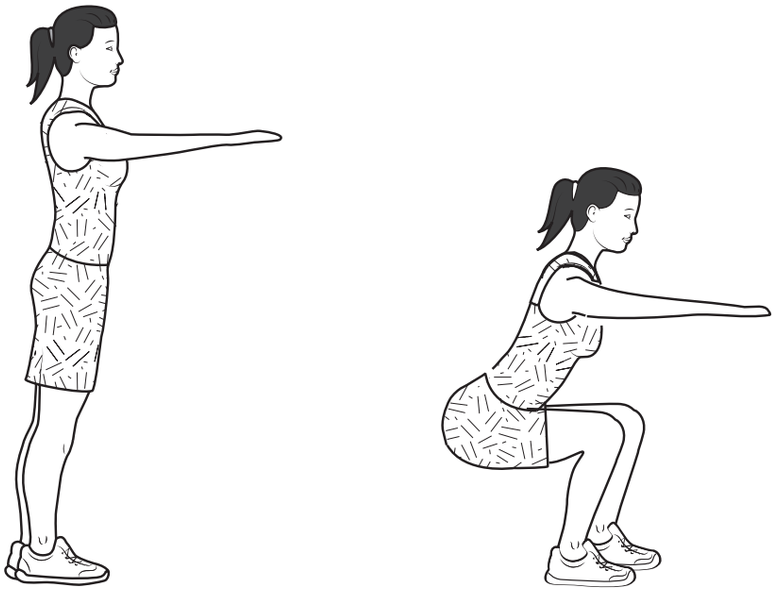

**Figure 3**

**6** Explain the type of muscle contraction in the quadriceps during the **downwards** phase of the squat.

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**(Total for Question 6 = 4 marks)**

One function of blood cells is to fight infection.

**7** Describe how blood cells fight infection.

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.....

.....

**(Total for Question 7 = 4 marks)**

**8** Identify the lung volumes from the descriptions in **Table 1**.
An example has been given.

| Description | Lung volume |
|---|---|
| The maximum amount of air that can be breathed in and out in one breath | Vital capacity |
| The amount of air breathed in or out per breath | 1 ..... |
| The amount of air left in the lungs after maximum expiration | 2 ..... |

**Table 1**

**(Total for Question 8 = 2 marks)**

**Figure 4** shows an athlete throwing a ball.


Source: © filo/Getty Images

**Figure 4**

**9** Explain the function of the **ligaments** in the **elbow** when throwing a ball.

**(Total for Question 9 = 4 marks)**

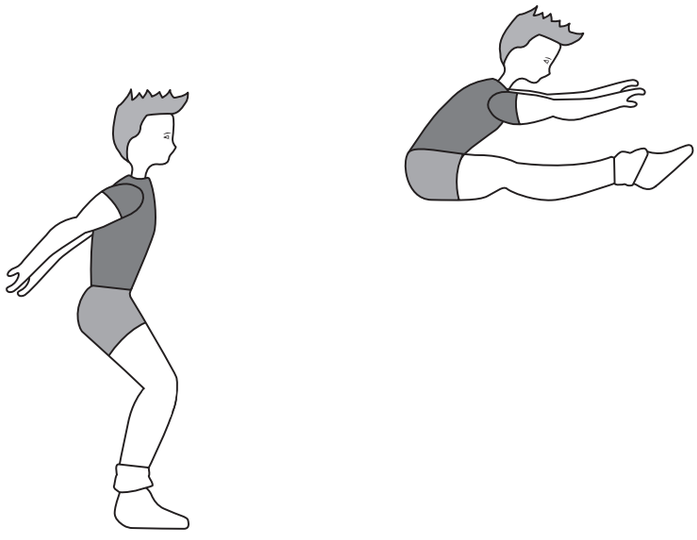
Different muscle fibre types are recruited at different parts of a game of football.

**10** Analyse how different muscle fibre types are used to support performance in a game of football.

**(8)**

**(Total for Question 10 = 8 marks)**

**Figure 5** shows an athlete performing a pike jump.



Preparation Execution

**Figure 5**

**11** Analyse how the axial and appendicular **skeletons** allow the movement necessary at the:

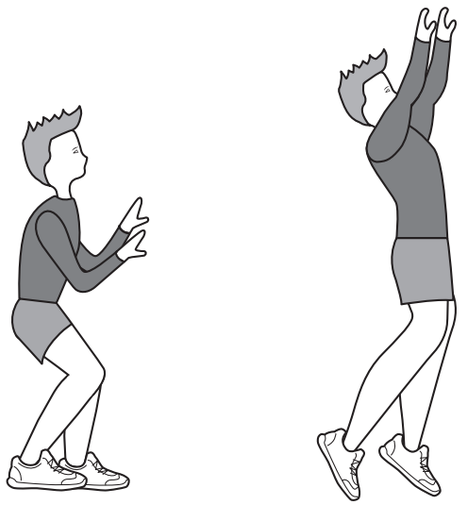
- trunk
- hip
- knee

to **move from** preparation to execution.

**(8)**

**(Total for Question 11 = 8 marks)**

**Figure 6** shows a volleyball player jumping to block the ball.



Preparation Execution

**Figure 6**

**12** Analyse the required movement at the:

- elbow
- shoulder
- ankle

for the athlete to **move from** preparation to execution.

**(14)**

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**(Total for Question 12 = 14 marks)**

**TOTAL FOR PAPER = 60 MARKS**

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