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 Certificate

Time 1 hour 30 minutes

Paper reference **31524H**

Sport

UNIT 1: Anatomy and Physiology

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 80.
- 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

SECTION A: The Skeletal System for Sports Performance

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

1 (a) Name the **three** bones that form the elbow joint.

(3)

1 .....

2 .....

3 .....

(b) State the **type** of synovial joint that allows the head to rotate.

(1)

.....

(Total for Question 1 = 4 marks)

The skeletal system has a number of types of bone. Two of these types are long and short bones.

2 (a) State **two other** types of bone found in the skeletal system.

(2)

1 .....

2 .....

Shantel is a goalkeeper in a football team. Her long and short bone types help her to perform successfully in a match.

(b) Explain how **long** and **short** bones help Shantel when goalkeeping in a match.

(4)

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(Total for Question 2 = 6 marks)

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One of the additional factors that can affect the skeletal system is arthritis.

3 Explain how arthritis affects the skeletal system.

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(Total for Question 3 = 3 marks)

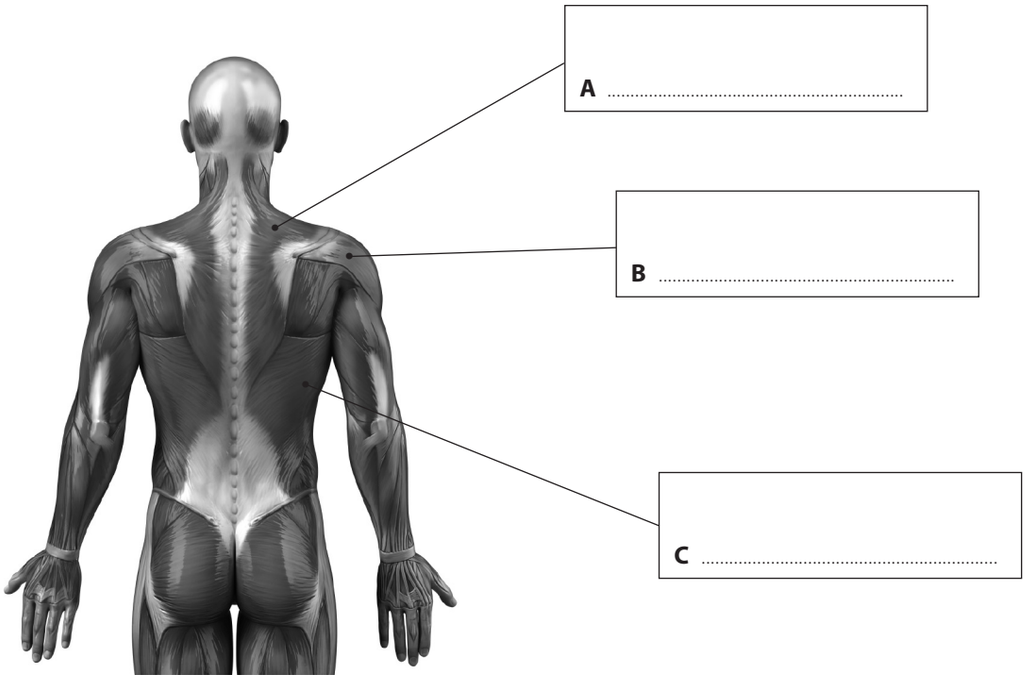
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SECTION B: The Muscular System for Sports Performance

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

4 Identify the muscles labelled **A–C** in **Figure 1**.



Source: © CLIPAREA | CUSTOM MEDIA/Shutterstock

Figure 1

(Total for Question 4 = 3 marks)

5 State **three** types of muscle contraction.

1 .....

2 .....

3 .....

(Total for Question 5 = 3 marks)

6 Describe the **all or none law** of muscle contraction.

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(Total for Question 6 = 2 marks)

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Tristan is a long-distance runner. One response that occurs during a training run is that his muscles become more pliable.

7 (a) Explain why increased muscle pliability will benefit Tristan when running.

(2)

Over a long period of time Tristan's muscular system has adapted to the training programme, causing an increase in myoglobin stores.

(b) Explain the impact of an increase in myoglobin stores on Tristan's performance in a 10,000 m race.

(3)

(Total for Question 7 = 5 marks)

TOTAL FOR SECTION B = 13 MARKS

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SECTION C: The Respiratory System for Sports Performance

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

Alex is an endurance athlete who is starting altitude training.

8 Explain the negative effects on Alex's respiratory system when starting training at altitude.

(Total for Question 8 = 4 marks)

Asthma is a condition that affects the respiratory system.

9 Describe the condition asthma.

(Total for Question 9 = 2 marks)

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Nancy is a netball player. During a match Nancy needs to remove waste products from her body. One way this is supported is through chemical control of breathing.

10 (a) Explain how chemical control of breathing helps Nancy to remove waste products from her working muscles.

(4)

When Nancy is playing a netball match, her lung volumes change.

(b) Analyse the changes to Nancy's lung volumes and the impact this will have on her netball performance.

(6)

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(Total for Question 10 = 10 marks)

TOTAL FOR SECTION C = 16 MARKS

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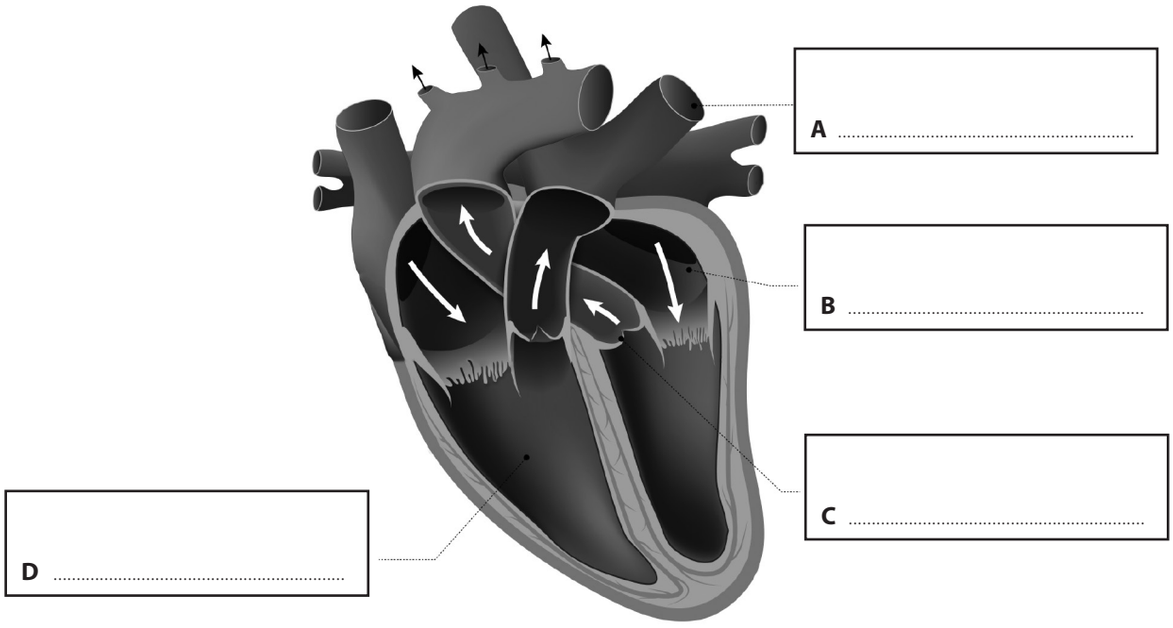
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SECTION D: The Cardiovascular System for Sports Performance

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

Figure 2 shows the heart.

11 Identify the structures of the heart labelled **A–D**.



© Source: Designua/Shutterstock

Figure 2

(Total for Question 11 = 4 marks)

12 Describe the **function** of capillaries.

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(Total for Question 12 = 2 marks)

Robin is a badminton player. Over time Robin's cardiovascular system has adapted. One of these adaptations is an increase in exercising stroke volume.

13 (a) Explain how an increase in exercising stroke volume has an impact on Robin's badminton performance.

(4)

(b) State the component of blood that carries most of Robin's oxygen during the badminton match.

(1)

Two functions of the cardiovascular system are to fight infection and clot blood.

(c) Analyse the **three other** functions of the cardiovascular system and how they impact on Robin's badminton performance.

(6)

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(Total for Question 13 = 11 marks)

TOTAL FOR SECTION D = 17 MARKS

SECTION E: Energy Systems for Sports Performance

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

The aerobic energy system can be broken down into three processes.

14 State each of the **three** aerobic energy system processes in the order they occur.

1 .....

2 .....

3 .....

(Total for Question 14 = 3 marks)

Rhea is a hockey player. Due to her training regime her aerobic system has adapted. One of these adaptations is that Rhea can now use fats as an energy source quicker.

15 Explain **two other** adaptations that have taken place within Rhea's aerobic energy system and the impact they have on her performance.

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(Total for Question 15 = 4 marks)

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Rhea will also rely on her anaerobic energy systems during a hockey match.

16 Analyse the role of the **anaerobic** energy systems in making sure that Rhea is successful in the hockey match.

(Total for Question 16 = 6 marks)

TOTAL FOR SECTION E = 13 MARKS

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SECTION F: Interrelationships between Body Systems for Sports Performance.

Answer the question. Write your answer in the space provided.

Damian has been a competitive 800 m swimmer for 10 years. Over this time, both his respiratory **and** muscular systems have adapted.

17 Analyse how the adaptations to Damian's respiratory **and** muscular systems affect his swimming performance in the 800 m.

(8)

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(Total for Question 17 = 8 marks)

TOTAL FOR SECTION F = 8 MARKS
TOTAL FOR PAPER = 80 MARKS

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