

Write your name here

Surname

Centre Number

Candidate Number

**Pearson Edexcel**  
**Level 1/Level 2 GCSE (9–1)**

# Physical Education

## Component 1: Fitness and Body Systems

Sample assessment materials for first teaching  
September 2016  
**Time: 1 hour 45 minutes**

Paper Reference  
**1PE0/01**

**You will need a calculator.**

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 candidate 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 90.
- 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.
- Check your answers if you have time at the end.

Turn over ►

S55762A

©2017 Pearson Education Ltd.

1/



Pearson

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

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 (a) Which **one** of the following is the correct classification of bone for the carpals? (1)

- A Short
- B Flat
- C Long
- D Irregular

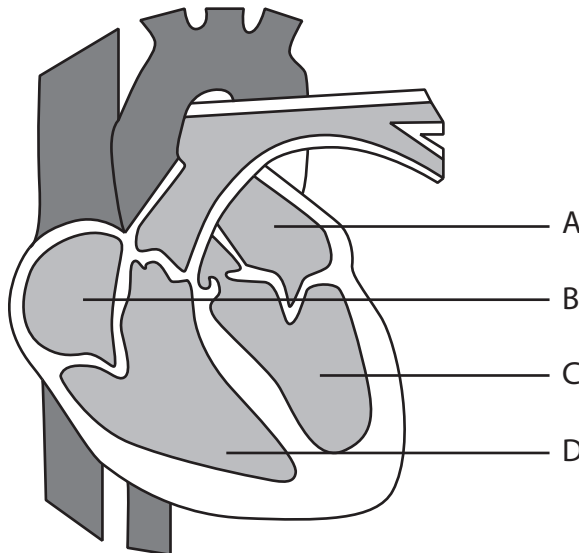
(b) Which **one** of the following is an example of an involuntary muscle? (1)

- A Muscle in the wall of the heart
- B Muscle in the upper arm
- C Muscle in the wall of a blood vessel
- D Muscle in the lower leg

(c) **Figure 1** shows a cross-section of the heart.

Identify the right atrium.

(1)



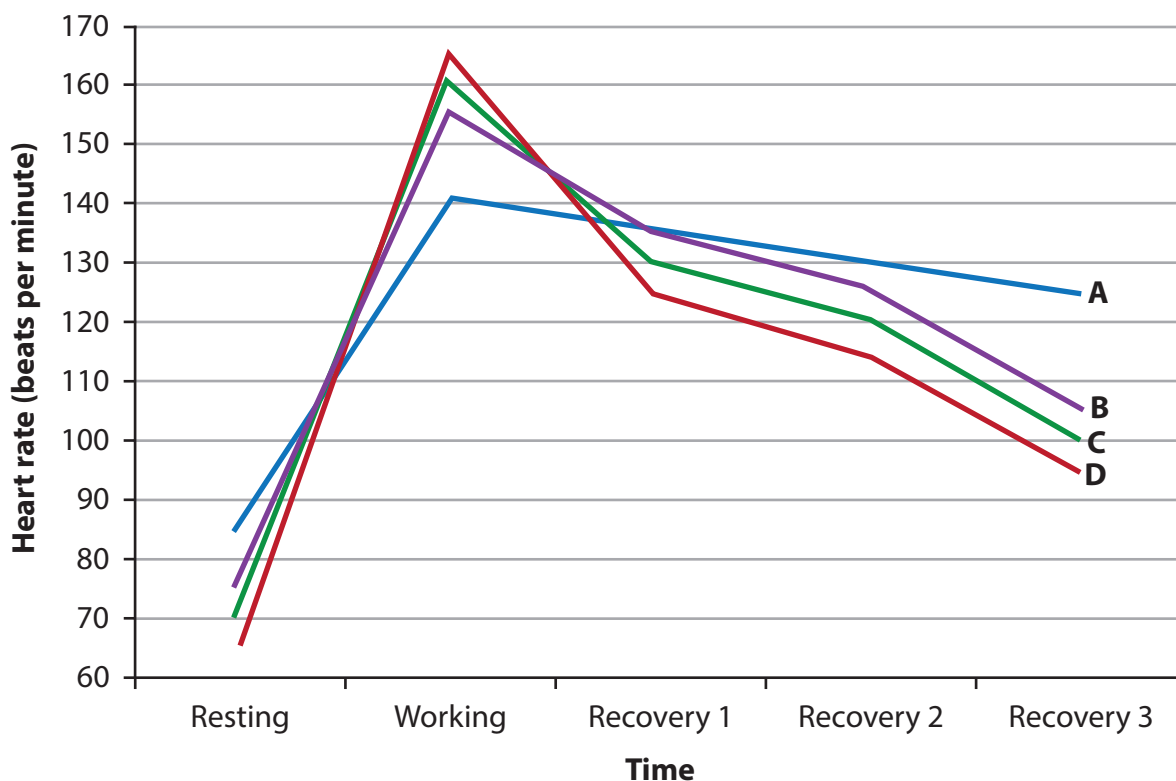
**Figure 1**

- A
- B
- C
- D



Luke recorded his heart rate as part of his Personal Exercise Programme (PEP).

**Figure 2** shows Luke's heart rate graphs for the first four weeks of his PEP.



**Figure 2**

(d) Which one of the heart rate graphs in **Figure 2** is most likely to represent Luke's heart rate during his **first** training session.

(1)

- A
- B
- C
- D



(e) Which one of the following is a definition of health?

(1)

- A** Refers to the weight someone should be, on average, based on their sex, height, bone structure and muscle girth
- B** The choices we make about how we live and behave and the impact on our health
- C** The ability to meet the demands of the environment
- D** A state of complete emotional, physical and social well-being, and not merely the absence of disease and infirmity

(f) Which one of the following fitness tests would be used to measure a performer's cardiovascular fitness?

(1)

- A** One-minute sit-up test
- B** One-minute press-up test
- C** Harvard step test
- D** 30m sprint

(g) Which one of the following states the reason for the use of a PARQ?

(1)

- A** To assess personal readiness for exercise
- B** To determine the training requirements for a sport
- C** To gain the consent of the performer to participate in training
- D** To assess the skill level of a performer

(h) Which one of the following is a soft tissue injury?

(1)

- A** Concussion
- B** Tennis elbow
- C** Fracture
- D** Dislocation

**(Total for Question 1 = 8 marks)**



2 **Figure 3** shows the movement of gases into and out of a capillary.



**Figure 3**

(a) Using **Figure 3**, state where this gas exchange is taking place.

(1)

(b) State **two** reasons why gas exchange is important in a long tennis match.

(2)

**(Total for Question 2 = 3 marks)**



3 **Figure 4** shows a rugby player about to pass the ball.



**Figure 4**

(a) Examine **two** ways the skeletal system makes it possible for the rugby player to move into the position shown to pass the ball.

1 .....

.....

.....

.....

.....

.....

.....

2 .....

.....

.....

.....

.....

.....

.....

(b) White blood cells are produced by the skeletal system.

Explain, using an example, why white blood cell production is important to the rugby player.

(3)

.....

.....

.....

.....

.....

.....

.....

**(Total for Question 3 = 9 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



4 Jango is 16 and trains regularly at an athletics club.

(a) Describe, using the Karvonen formula (simplified), how to calculate Jango's aerobic target zone.

(3)

.....

.....

.....

.....

.....

.....

(b) State how the calculation would change when calculating Jango's anaerobic target zone.

(2)

.....

.....

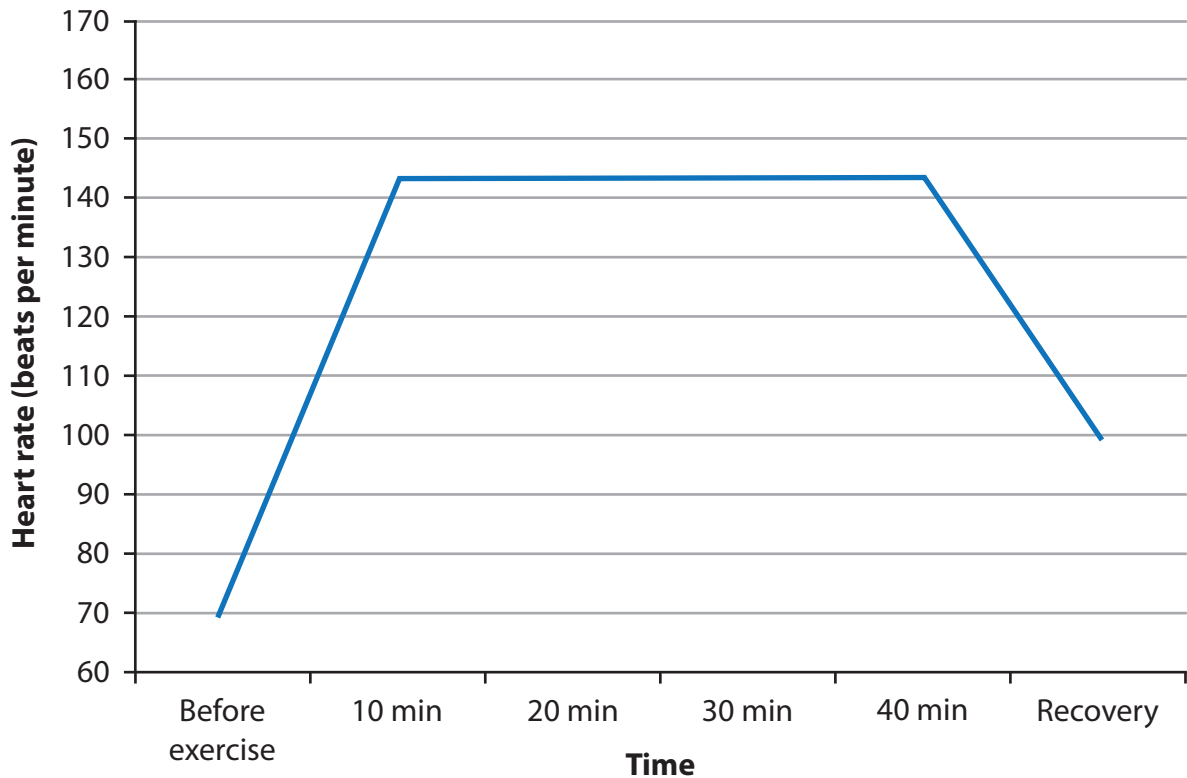
.....

.....





**Figure 5** shows Jango's heart rate during a typical training session.



**Figure 5**

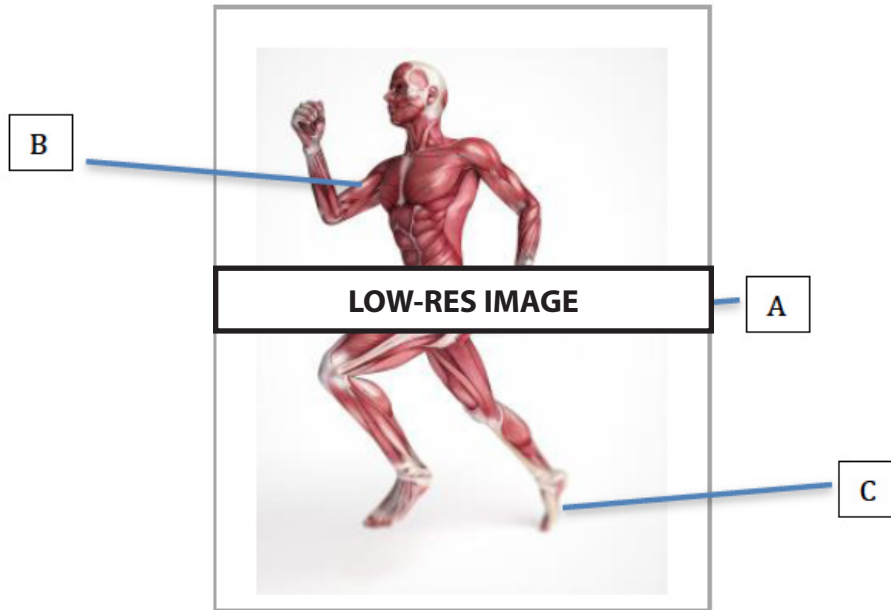
- (a) Using **Figure 5**, explain whether Jango is training for an endurance or power event.

(4)

(Total for Question 4 = 9 marks)



5 **Figure 6** shows the muscular system while running.



**Figure 6**

(a) Complete the following statements about the labelled muscles in **Figure 6**.

(2)

The muscle labelled **A** in **Figure 6** is the .....

When muscle **A** contracts it .....

(b) State the name of the muscle that works antagonistically with the muscle labelled **A** in **Figure 6**.

(2)



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(c) Analyse the action of muscle **B**, shown in **Figure 6**, to aid the performance of the runner.

(4)

.....

.....

.....

.....

.....

.....

.....

.....

.....

(d) Analyse the lever system acting at **C** in **Figure 6**.

(4)

.....

.....

.....

.....

.....

.....

.....

.....

.....

**(Total for Question 5 = 11 marks)**



6 Different activities have different fitness requirements.

Complete **Table 1** by:

(a) identifying the component of fitness **most** useful to the stated performer. (2)

(b) stating the advantage of this component of fitness for performance. (2)

**Table 1**

<b>Performer</b>	<b>(a) Component of fitness</b>	<b>(b) Advantage to performance</b>
<b>100m sprinter</b>		
<b>Long-distance rower</b>		

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



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

7 State a fitness test that the following performers should use to assess their fitness for their sport.

• Finn, a long distance swimmer (1)

• Depa, a sprint hurdler (1)

• Owen, a high jumper (1)

**(Total for Question 7 = 3 marks)**



**8** Rey is a long distance cyclist. As part of her Personal Exercise Programme (PEP) Rey carries out aerobic training regularly.

(a) State **two** long-term effects of aerobic training on the cardio-respiratory system.

(2)

1 .....

.....

2 .....

.....

(b) Explain why the **two** long-term effects you have stated in (a) would be an advantage to Rey in long distance cycling.

(4)

1 .....

.....

.....

.....

.....

2 .....

.....

.....

.....

**(Total for Question 8 = 6 marks)**



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

9 (a) Describe plyometric training.

(2)

.....

.....

.....

(b) Give an example of a sports performer who would use plyometric training.

(1)

.....

(c) State **one** advantage and **one** disadvantage of plyometric training.

(2)

Advantage

.....

.....

Disdvantage

.....

.....

**(Total for Question 9 = 5 marks)**



**10** Diuretics are a banned performance-enhancing drug.

State **two** reasons why an athlete may take diuretics even though they are banned.

Reason 1

.....  
.....

Reason 2

.....  
.....

**(Total for Question 10 = 2 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA





11 **Figure 7** shows Olympic doping cases by sport from 1968 to 2010.

No. of doping cases reported	III. Olympic doping cases by sport, 1968–2010
36	Weightlifting <sup>1,2,3</sup>
28	Athletics (Track and Field) <sup>4,5,6</sup>
12	Cross Country Skiing <sup>7,8</sup>
8	Equestrian
6	Ice Hockey <sup>9,10,11</sup> , Wrestling <sup>12</sup>
5	Cycling <sup>13</sup>
3	Biathlon <sup>8</sup> , Modern Pentathlon, Volleyball
3	Baseball <sup>14</sup> , Gymnastics <sup>15</sup> , Judo, Rowing, Swimming, Shooting
1	Alpine Skiing <sup>16</sup> , Basketball, Boxing <sup>17</sup> , Canoeing, Sailing
<b>127</b>	<b>Total</b>

(Source: <http://sportsanddrugs.procon.org/view.resource.php?resourceID=004420>)

**Figure 7**

Using **Figure 7**:

(a) identify the activity with the greatest number of reported doping cases. (1)

(b) state the **most** likely type of performance-enhancing drug taken by the performers in the activity you identified in (a). (1)



**Figure 8** shows the number of doping tests carried out in summer and winter Olympic Games.

Year	Place	Number of tests	Number of cases recorded
1968	Mexico City	667	1
1972	Munich	2,079	7
1976	Montreal	2,054	11
1980	Moscow	645	0
1984	Los Angeles	1,507	12
1988	Seoul	1,598	10
1992	Barcelona	1,848	5
1996	Atlanta	1,923	2
2000	Sydney	2,359	11
2004	Athens	3,667	26*
2008	Beijing	4,770	14+6**

#### Summer games

Year	Place	Number of tests	Number of cases recorded
1968	Mexico City	667	1
1972	Munich	2,079	7
1976	Montreal	2,054	11
1980	Moscow	645	0
1984	Los Angeles	1,507	12
1988	Seoul	1,598	10
1992	Barcelona	1,848	5
1996	Atlanta	1,923	2
2000	Sydney	2,359	11
2004	Athens	3,667	26*
2008	Beijing	4,770	14+6**

#### Winter games

(Source: <http://sportsanddrugs.procon.org/sourcefiles/IOCFactsheet2010.pdf>)

**Figure 8**



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(c) Analyse the data in **Figure 8** to determine:

- the trend in number of tests administered at the Olympic Games (1)

- a difference in testing data between the summer and winter games (1)

(Total for Question 11 = 4 marks)



**12** Warming up and checking equipment and facilities before use helps reduce injury in sport.

(a) State **two** other ways of reducing injury in adventurous activities such as skiing and snowboarding. (2)

1 .....

2 .....

(b) Warm-ups have three main phases.

(i) Identify the **three** phases of a warm-up. (3)

1 .....

2 .....

3 .....

(ii) Give an example of an activity you would do at **each** stage of a warm-up before playing a team game. (3)

1 .....

2 .....

3 .....

**(Total for Question 12 = 8 marks)**



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

13 Evaluate the relevance of the different muscle fibre types for a 5000 m runner.

(9)

Area with horizontal dotted lines for writing the answer.



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 13 = 9 marks)



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

14 Figure 9 shows a circuit.

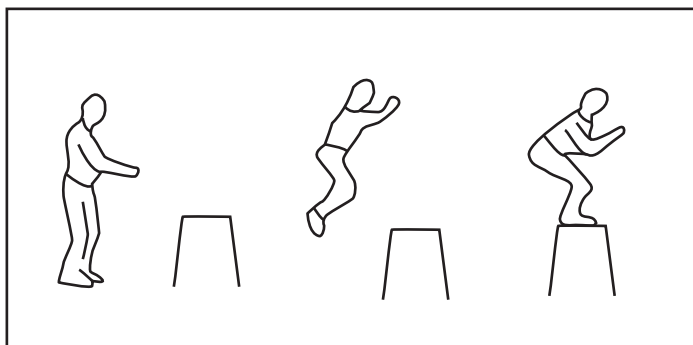
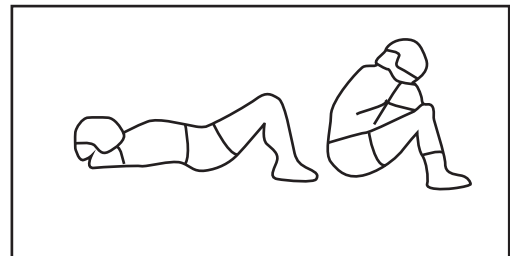
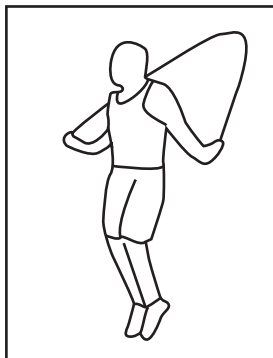
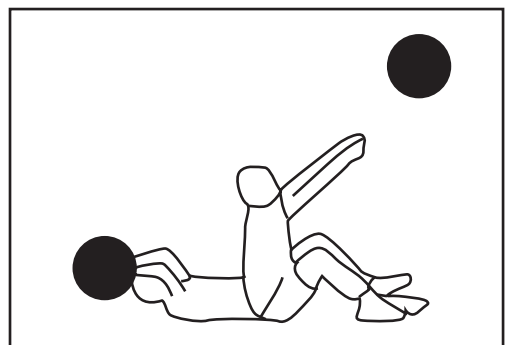
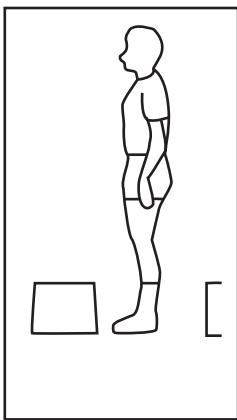
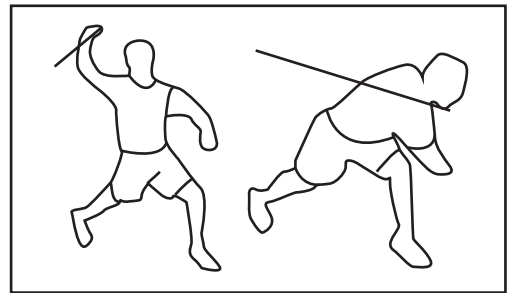
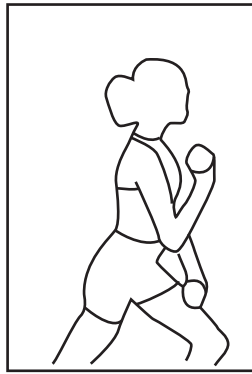
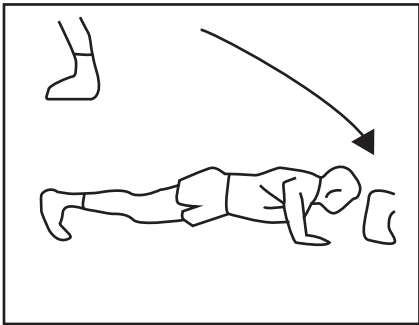


Figure 9



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Padme wants to increase the distance she throws the javelin.

Discuss the suitability of the circuit shown in **Figure 9** to improve Padme's javelin performance.

Area with horizontal dotted lines for writing.

(Total for Question 14 = 9 marks)

**TOTAL FOR PAPER = 90 MARKS**





**Pearson Edexcel Level 1/Level 2 GCSE (9-1) in Physical Education  
Paper 1: Fitness and Body Systems - Mark scheme - 1PE0/01**

**SAM's 2**

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (a)</b>	<b>A</b> Short	<b>(1)</b>

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (b)</b>	<b>C</b> Muscles in the wall of a blood vessel	<b>(1)</b>

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (c)</b>	<b>B</b> Right atrium	<b>(1)</b>

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (d)</b>	<b>A</b>	<b>(1)</b>

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (e)</b>	<b>D</b> A state of complete emotional, physical and social well-being, and not merely the absence of disease and infirmity	<b>(1)</b>

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (f)</b>	<b>C</b> Harvard step test	<b>(1)</b>

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (g)</b>	<b>A</b> To assess personal readiness for exercise	<b>(1)</b>

<b>Question Number</b>	<b>Answer</b>	<b>Mark</b>
<b>1 (h)</b>	<b>B</b> Tennis elbow	<b>(1)</b>

Question Number	Answer (AO3 – 1 mark)	Mark
<b>2(a)</b>	<p>One mark for correct identification from diagram:</p> <ul style="list-style-type: none"> <li>• at the muscle/tissues (1)</li> </ul>	<b>(1)</b>

Question Number	Answer (AO2 – 2 marks)	Mark
<b>2(b)</b>	<p>One mark each for each appropriate reason why gas exchange is important in a long tennis match.</p> <p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• (Need oxygen) for energy production to sustain long rallies/games (1)</li> <li>• Need to remove the <b>additional</b> carbon dioxide generated through playing tennis so that it can be breathed out (1)</li> <li>• Need the additional oxygen so that the player does not need to rely on anaerobic energy production. (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(2)</b>

Question Number	Answer (AO2 – 2 mark, AO3 - 4 marks)	Mark
<b>3 (a)</b>	<p>One mark for identifying a role of the skeletal system that relates to the rugby player in Figure 3 and a maximum of two more marks for appropriate expansion to justify its relevance. Maximum six marks</p> <p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• In order to achieve this position, the rugby player needs to be able to <b>flex</b> her knees (1) <b>this</b> is only possible due to the type of <b>joint</b> formed at the knee (1). Because of the arrangement of the bones the joint can flex allowing the player to adopt this crouched position (1)</li> <li>• The player needs to be able to <b>move</b> her skeleton to achieve this shape (1) for example, the player can move her arms to prepare to throw <b>because</b> the bones provide sites for <b>muscle attachment</b> (1) <b>so</b> when the muscles contract they pull on the <b>bones</b> of the lower arm allowing flexion at the elbow (1)</li> <li>• The rugby player needs to be able to <b>hold</b> her body weight to achieve this position/form a stable base (1) <b>this</b> is possible due to the <b>short</b> bones of the foot (1) their structure means <b>that</b> they are <b>strong</b> enough to ensure the bones are not <b>damaged</b> during the game. (1)</li> </ul> <p>Accept other appropriate responses.</p> <p>One mark for identification of link between the skeletal system and the rugby position (AO2)</p> <ul style="list-style-type: none"> <li>- Joints for movement</li> <li>- Muscle attachment</li> <li>- Weight bearing</li> <li>- Range of movement</li> </ul> <p>Up to two marks for suitable expansion (AO3)</p> <ul style="list-style-type: none"> <li>- What the skeletal system does for the player</li> <li>- Consequence of this</li> </ul>	<b>(6)</b>

Question Number	Answer (AO1 – 1 mark; AO2 – 2 marks)	Mark
<b>3 (b)</b>	<p>One mark for importance of white blood cells, one mark for an example of how this will impact on the rugby player and one mark for appropriate expansion of explanation.</p> <p>Any <b>one</b> from:</p> <ul style="list-style-type: none"> <li>• White blood cells <b>help</b> fight infection (1) for <b>example</b>, during a rugby tackle a player may receive a cut that causes a risk of infection (1) <b>therefore</b> white blood cells are needed to destroy the bacteria that have entered the cut (1)</li> <li>• White blood cells <b>help</b> fight infection (1) for <b>example</b>, if a rugby player catches a cold white blood cells try to destroy the germs/virus causing the cold (1) <b>therefore</b> increasing the health of the player so they can continue to train/play. (1)</li> </ul> <p>Accept any other appropriate responses.</p> <p>One mark for reference to fighting infection (AO1)</p> <p>Up to two marks for suitable expansion</p> <ul style="list-style-type: none"> <li>- Example (AO2)</li> <li>- Why this is important to the player (AO2)</li> </ul>	<b>(3)</b>

Question Number	Answer (AO1 – 2 marks; AO2 – 1 mark)	Mark
<b>4 (a)</b>	<p>One mark for each correct linked statement to describe the process required to calculate aerobic training zones using the Karvonen formula (simplified).</p> <ul style="list-style-type: none"> <li>• Calculate his maximum heart rate by taking 16 from 220 (1) then calculate 60% of his maximum heart rate to give the lower threshold for his aerobic target zone (1) finally, calculate 80% of his maximum heart rate to give the upper threshold of his aerobic training zone. (1)</li> </ul> <p>If modified version of Karvonen used</p> <ul style="list-style-type: none"> <li>• Calculate his maximum heart rate by taking 16 from 220 and then subtract 70 (1), then calculate 60% of this and add resting heart rate/70 back on (1) to get the upper level use 80% rather than 60% (1)</li> </ul> <p>Accept other appropriate responses.</p> <p>Up to three marks for suitable description</p> <ul style="list-style-type: none"> <li>• Formula with values added from question (AO2)</li> <li>• Calculating 60% of Max HR (AO1)</li> <li>• Calculating 80% of Max HR (AO1)</li> </ul>	<b>(3)</b>

Question Number	Answer (AO1 – 2 marks)	Mark
<b>4(b)</b>	<p>One mark for correct statement regarding percentages to be used and one mark for appropriate expansion of how this differs from the aerobic training zone (up to two marks).</p> <ul style="list-style-type: none"> <li>• Rather than 60 – 80% of Max heart rate (1) would use 80-90% of maximum heart rate (1).</li> </ul> <p>Accept other appropriate responses.</p> <p>Up to two marks for statement of differences</p> <ul style="list-style-type: none"> <li>- Not 60 – 80% (AO1)</li> <li>- Replace with 80 – 90% (AO1)</li> </ul>	<b>(2)</b>

Question Number	Answer (AO2 – 1 mark, AO3 -3 marks)	Mark
<b>4 (c)</b>	<p>One mark for concluding session designed for an endurance athlete and a maximum of three more marks for appropriate expansion of why the graph indicates this is for an endurance athlete.</p> <p>Any <b>one</b> from:</p> <ul style="list-style-type: none"> <li>• The heart rate <b>remains steady</b> during the training session (1) indicating a <b>consistent workload</b> (1) <b>as</b> this is over an <b>extended period of time</b> (1) the session would be suitable for an <b>endurance</b> athlete (1)</li> <li>• The heart rate <b>remains steady</b> during the training session (1) over an <b>extended period of time</b> (1) <b>therefore</b> Jango must be working at a <b>moderate intensity</b> rather than maximal (1) <b>therefore</b> his session would be suitable for an endurance athlete. (1)</li> </ul> <p>Accept any other appropriate responses.</p> <p>One mark for identification of training for an endurance event (AO2)</p> <p>Up to three marks for suitable expansion (AO3)</p> <ul style="list-style-type: none"> <li>- Analysis of graph (max 2)</li> <li>- Impact of this on workload</li> <li>- Link between work load and endurance athletic events</li> </ul>	<b>(4)</b>

Question Number	Answer (AO1 – 2 marks)	Mark
<b>5 (a)</b>	<p>One mark for each correct answer shown in bold.</p> <p>The muscle labelled A in Figure 5 is the <b>GLUTEUS MAXIMUS</b>. (1)</p> <p>When muscle A contracts it <b>EXTENDS THE LEG AT THE HIP</b>. (1)</p>	<b>(2)</b>

Question Number	Answer (AO1 – 1 mark)	Mark
<b>5 (b)</b>	<p>One mark for:</p> <p>Hip flexors (1)</p>	<b>(1)</b>

Question Number	Answer (AO1 – 2 marks, AO3 – 2 marks)	Mark
<b>5 (c)</b>	<p>One mark each for any of the following points</p> <ul style="list-style-type: none"> <li>• Muscle B is the biceps (1)</li> <li>• In Figure 5 muscle B is contracted (1) allowing the arm to flex at the elbow (1) this means that the runner can 'pump' his arms to maintain control so he can run faster. (1)</li> </ul> <p>Accept other appropriate responses.</p> <p>Up to two marks for explanation of how muscle B aids performance. (AO2)</p> <p>Up to two marks for analysis of the action of muscle B. (AO3)</p>	<b>(4)</b>



Question Number	Answer (AO1 – 1 mark, AO3 – 3 marks)	Mark
<b>5 (d)</b>	<p>One mark for each point related to the second class lever system operating at the ankle when running.</p> <p>Any <b>one</b> from:</p> <ul style="list-style-type: none"> <li>• A second class lever system is formed at C (1). The load is the weight of the runner (1) the effort is provided by the gastrocnemius (1) and the joint at the ball of the foot acts as the fulcrum (1)</li> <li>• The weight of the runner acts downwards and creates the load that must be moved. (1) The ball of the foot provides the fulcrum for the lever to rotate around (1) the gastrocnemius contracts so we can apply an effort force that allows the runner to move forward (1) because of the placement of the load this is a second class lever system (1)</li> <li>• This is a second class lever system (1) as the load is between the fulcrum and the effort (1). This provides a mechanical advantage for the performer (1) so they need minimal effort from the gastrocnemius to lift the body weight to move forward when running (1).</li> </ul> <p>Accept other appropriate responses.</p> <p>One mark for recognition of lever system. (AO1)</p> <p>Up to three marks for suitable expansion (AO3)</p> <ul style="list-style-type: none"> <li>- Recognition of each aspect of the lever system operating at C in Figure 5</li> </ul>	<b>(4)</b>

Question Number	Answer (AO2 – 4 marks)	Mark									
<b>6 (a)</b> <b>6 (b)</b>	<p>One mark for each correct response.</p> <table border="1"> <thead> <tr> <th>Performer</th> <th>Component of fitness</th> <th>Advantage to performance</th> </tr> </thead> <tbody> <tr> <td>100m sprinter</td> <td>Speed/Power (1)</td> <td>Quicker time/greater acceleration (1)</td> </tr> <tr> <td>Long distance rower</td> <td>Muscular endurance (1)</td> <td>Maintain rowing action for length of race without fatigue to arms (1)</td> </tr> </tbody> </table> <p>Accept any other appropriate examples of advantages to the performance.</p>	Performer	Component of fitness	Advantage to performance	100m sprinter	Speed/Power (1)	Quicker time/greater acceleration (1)	Long distance rower	Muscular endurance (1)	Maintain rowing action for length of race without fatigue to arms (1)	<b>(4)</b>
Performer	Component of fitness	Advantage to performance									
100m sprinter	Speed/Power (1)	Quicker time/greater acceleration (1)									
Long distance rower	Muscular endurance (1)	Maintain rowing action for length of race without fatigue to arms (1)									

Question Number	Answer (AO2 – 3 marks)	Mark
<b>7</b>	<p>One mark for each appropriate fitness test for the given performers.</p> <ul style="list-style-type: none"> <li>• Long distance swimmer – Cooper 12-minute <b>swim</b> test (1)</li> <li>• Sprint hurdler – Sit and reach/30m sprint (1)</li> <li>• High jumper – Vertical jump test (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(3)</b>

Question Number	Answer (AO1 – 2 marks)	Mark
<b>8 (i)</b>	<p>One mark for each correctly stated long-term effect of aerobic training on the cardio-respiratory system. (Maximum of two)</p> <ul style="list-style-type: none"> <li>• Increased size/strength of heart (1)</li> <li>• Increased resting stroke volume (1)</li> <li>• Decreased resting heart rate (1)</li> <li>• Increased capillarisation (1)</li> <li>• Increased strength of diaphragm (1)</li> </ul> <p>Accept any other appropriate examples of long-term effects of aerobic training on the cardio-respiratory system.</p>	<b>(2)</b>

Question Number	Answer (AO1, 2 marks, AO2 2 marks)	Mark
<b>8 (ii)</b>	<p>One mark for correct link between training effect and advantage for long distance cycling and one more mark for appropriate expansion to demonstrate advantage. Maximum four marks</p> <p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• [Increased size/strength of heart] – increased oxygen delivery as more blood pumped per beat (1) <b>therefore</b> more oxygen available for energy release (1)</li> <li>• [Increased resting stroke volume] – greater volume of blood ejected per beat therefore during exercise more blood can be circulated (1) <b>which means that</b> Rey can remove the <b>increased</b> carbon dioxide from her blood when she is exercising (1)</li> <li>• [Decreased resting heart rate] – gives Rey a greater heart rate range when exercising (1) <b>therefore</b> she will be able to continue to supply sufficient oxygen when she is exercising (1)</li> <li>• [Increased capillarisation] – this means she will have improved oxygen delivery to the muscles (1) <b>because</b> of the increased number of available capillaries (1)</li> <li>• [Increased strength of diaphragm] – so the diaphragm can completely flatten when it contracts (1) <b>giving</b> a greater space for the lungs to expand and take in more oxygen. (1)</li> </ul> <p>Accept any other appropriate examples of the benefit of the long-term effects of aerobic training on the cardio-respiratory system for a long distance cyclist.</p>	<b>(4)</b>

Question Number	Answer (AO1 – 2 marks)	Mark
<b>9 (a)</b>	<p>One mark for each correct linked statement that describes plyometric training.</p> <ul style="list-style-type: none"> <li>• Involves jumping from one level to another (1) the muscle lengthens on landing and then quickly contracts and shortens (to provide power to make next jump) (1)</li> <li>• Can be skipping or bounding (1) where the muscles have to exert maximum force quickly. (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(2)</b>

Question Number	Answer (AO2 – 1 mark)	Mark
<b>9 (b)</b>	<p>One mark for identification of a suitable example of a performer who would gain from plyometric training.</p> <p>Any <b>one</b> from:</p> <ul style="list-style-type: none"> <li>• A volleyball player (1)</li> <li>• A high jumper (1)</li> </ul> <p>Accept other appropriate examples.</p>	<b>(1)</b>

Question Number	Answer (AO1 – 2 marks)	Mark
<b>9 (c)</b>	<p>One mark for one advantage of plyometric training, and one mark for one disadvantage of plyometric training.</p> <p>Advantage</p> <p>Any <b>one</b> from:</p> <ul style="list-style-type: none"> <li>• Needs minimal equipment, e.g. a skipping rope (1)</li> <li>• Effective way to increase power (1)</li> </ul> <p>Accept other appropriate responses.</p> <p>Disadvantage</p> <p>Any <b>one</b> from:</p> <ul style="list-style-type: none"> <li>• Can become injured if intensity is too great (1)</li> <li>• Increased risk of muscle strain (1)</li> </ul> <p>Accept other appropriate responses of disadvantages.</p>	<b>(2)</b>

Question Number	Answer (AO1 – 2 marks)	Mark
<b>10</b>	<p>One mark for each appropriate reason why an athlete may take a diuretic.</p> <ul style="list-style-type: none"> <li>• Mask the presence of another drug. (1)</li> <li>• For rapid weight loss to 'make' the right weight for their activity. (1)</li> </ul>	<b>(2)</b>

Question Number	Answer (AO3 – 1 mark)	Mark
<b>11 (a)</b>	<p>One mark for correct identification of activity.</p> <ul style="list-style-type: none"> <li>• Weightlifting (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(1)</b>

Question Number	Answer (AO2 – 1 mark)	Mark
<b>11 (b)</b>	<p>One mark for correct identification of drug.</p> <ul style="list-style-type: none"> <li>• Anabolic steroids (1)</li> </ul>	<b>(1)</b>

Question Number	Answer (AO3 – 2 marks)	Mark
<b>11 (c) (i) and 11 (c) (ii)</b>	<p>One mark for correct determination.</p> <ul style="list-style-type: none"> <li>• Increase in number of tests carried out (1)</li> <li>• More testing carried out in the summer games than the winter games (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(2)</b>

Question Number	Answer (AO2 – 2 marks)	Mark
<b>12 (a)</b>	<p>One mark for each correct method of reducing injury in adventurous activities.</p> <p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• Following the rules of the activity/ ski-way code (1)</li> <li>• Wearing protective warm clothing (1)</li> <li>• Wear a helmet (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(2)</b>

Question Number	Answer (AO1 – 3 marks)	Mark
<b>12 (b) (i)</b>	<p>One mark for <b>each</b> correct identification of a phase of the warm-up.</p> <ul style="list-style-type: none"> <li>• Pulse raiser (1)</li> <li>• Stretching (1)</li> <li>• More intense activity using skills required in game (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(3)</b>

Question Number	Answer (AO2 – 3 marks)	Mark
<b>12 (b) (ii)</b>	<p>One mark for <b>each</b> appropriate example of an activity that could be used in each stage of the warm-up.</p> <ul style="list-style-type: none"> <li>• (Pulse raiser) – a game of 'tag' (1)</li> <li>• (Stretching) - hamstring stretches (1)</li> <li>• (Skill practice) - practice drill, sprinting to receive the ball and shooting (1)</li> </ul> <p>Accept other appropriate responses.</p>	<b>(3)</b>

Question Number	Indicative content (AO1 – 3 marks; AO2 – 3 marks; AO3 – 3 marks for evaluation)	Mark
13	<p>Reward acceptable answers. Responses may include, but are not limited to, the following:</p> <p>Knowledge and understanding of muscle fibre types and their characteristics (AO1)</p> <ul style="list-style-type: none"> <li>• There are slow and fast twitch muscle fibre types.</li> <li>• Fast twitch fibres are classified as either type IIa or type IIX.</li> <li>• Different fibre types are suited to different types of activities or actions</li> <li>• Type IIX have the most powerful contraction.</li> </ul> <p>Application of knowledge of fibre type to the 5000 m (AO2) Specific examples where the different fibre types can be used in a 5000 m run.</p> <ul style="list-style-type: none"> <li>• Type 1 (slow twitch) muscle fibres are slow to fatigue, so those in the legs would be able to continue to contract to allow the runner to continue to run throughout the 5000 m without fatiguing.</li> <li>• Type IIa can generate more force than type 1 and are fairly resistant to fatigue so would be used for a fast lap.</li> <li>• Type IIX have the most powerful contraction so would be valuable during a fast break or sprint finish.</li> </ul> <p>Evaluating the relevance of the techniques referenced and therefore a judgement about the most important for the 5000 m runner (AO3)</p> <ul style="list-style-type: none"> <li>• Consideration of why slow twitch muscle fibres are required in the 5000 m (e.g. to sustain performance throughout the race otherwise the runner would need to walk to recover).</li> <li>• Consideration of why fast twitch type IIa fibres are required in the 5000 m (e.g. runner is able to inject and sustain an elevated pace to maintain position when running a fast lap).</li> <li>• Consideration of why fast twitch type IIX fibres are required in a 5000 m race (e.g. to sprint to break away from the pack if the race pace is too slow therefore spreading out the runners more).</li> <li>• Conclusion making a reasoned judgement that the runner needs all fibre types to implement their race plan or respond appropriately to others during the race.</li> </ul> <p>Students who only show achievement against AO1 will not be able to gain marks beyond level 1.</p>	<b>(9)</b>



Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-3	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of knowledge and understanding, with limited technical language used (AO1).</li> <li>• Limited attempt to apply knowledge to question context (AO2).</li> <li>• Generic assertions may be presented (AO3 – evaluation).</li> </ul>
Level 2	4-6	<ul style="list-style-type: none"> <li>• Demonstrates accurate knowledge and understanding, including appropriate use of technical language in places (AO1).</li> <li>• Applied knowledge to question context (AO2).</li> <li>• Attempts at drawing conclusion, with some support from relevant analysis (AO3 – evaluation).</li> </ul>
Level 3	7-9	<ul style="list-style-type: none"> <li>• Demonstrates accurate knowledge and understanding throughout, including appropriate use of technical language (AO1).</li> <li>• Applied detailed knowledge to question context throughout (AO2).</li> <li>• Reaches a valid and well-reasoned conclusion supported by relevant evidence (AO3 – evaluation).</li> </ul>

Question Number	Indicative content (AO1 – 3 marks; AO2 – 3 marks; AO3 – 3 marks for evaluation)	Mark
14	<p>Reward acceptable answers. Responses may include, but are not limited to, the following:</p> <p>Knowledge and understanding of circuit training (AO1)</p> <ul style="list-style-type: none"> <li>• A circuit is a series of stations, with a different exercise at each station.</li> <li>• Circuits should be organised to allow a high intensity of exercise with a recovery period before using the same muscles again.</li> <li>• Circuit training is a very adaptable method of training, but altering the stations or reps/sets you can alter the aspect of fitness worked on.</li> </ul> <p>Application of knowledge, linking circuit stations to components of fitness relevant to a throwing event such as javelin (AO2)</p> <p>Specific examples of how this circuit could or could not be used to develop performance in javelin</p> <ul style="list-style-type: none"> <li>• Arm exercises have been included, which will help develop the performer’s arm strength, e.g. bicep curl, and arm power, e.g. the medicine ball throw, both of which would be relevant to javelin.</li> <li>• If the station lasts a sustained amount of time, skipping would be good to increase cardiovascular fitness.</li> <li>• The box jumps would allow development of power in the thrower’s legs.</li> </ul> <p>Making connections between the use of the exercises in the circuit and impact on javelin performance (AO3)</p> <ul style="list-style-type: none"> <li>• Different exercises helps to avoid tedium and therefore increase chances of maintaining training and circuit training can be made more specific to javelin by making sure exercise focus on speed and power of relevant muscles, increasing the chance of throwing further.</li> <li>• Requires correct exercises, some stations less relevant to javelin (e.g. skipping) therefore would not bring about required adaptations. Stations not providing opportunity to replicate required javelin movement so even if power is increased, if timing or coordination of throw incorrect there will be limited improvement in performance.</li> <li>• Requires correct order/rep/sets to allow recovery of muscle groups otherwise increased risk of injury that would prevent training leading to a drop in performance.</li> </ul>	(9)

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of knowledge and understanding, with limited technical language used (AO1).</li> <li>• Limited attempt to apply knowledge to question context (AO2).</li> <li>• Generic assertions may be presented (AO3 – evaluation).</li> </ul>
Level 2	4–6	<ul style="list-style-type: none"> <li>• Demonstrates accurate knowledge and understanding, including appropriate use of technical language in places (AO1).</li> <li>• Applied knowledge to question context (AO2).</li> <li>• Attempts at drawing conclusion, with some support from relevant analysis (AO3 – evaluation).</li> </ul>
Level 3	7–9	<ul style="list-style-type: none"> <li>• Demonstrates accurate knowledge and understanding throughout, including appropriate use of technical language (AO1).</li> <li>• Applied detailed knowledge to question context throughout (AO2).</li> <li>• Reaches a valid and well-reasoned conclusion supported by relevant evidence (AO3 – evaluation).</li> </ul>