BTEC

Pearson BTEC Level 3 Nationals

Write your name here

Surname	**Forename**

Learner Registration Number | **Centre Number** | **Level 3**

Sport

Unit 1: Anatomy and Physiology

Certificate, Extended Certificate, Foundation Diploma, Diploma, Extended Diploma

Sample assessment material
Time: 1 hour 30 minutes

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 grey boxes
  – 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.

Paper reference
XXXX/XX
S50001A

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Turn over ▶

PEARSON

SECTION A: Skeletal System for Sports Performance

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

1 Explain how bones of the skeleton are used in movement for sport.

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Total for Question 1 = 2 marks

2 Name the bones labelled A–C in **Figure 1**.

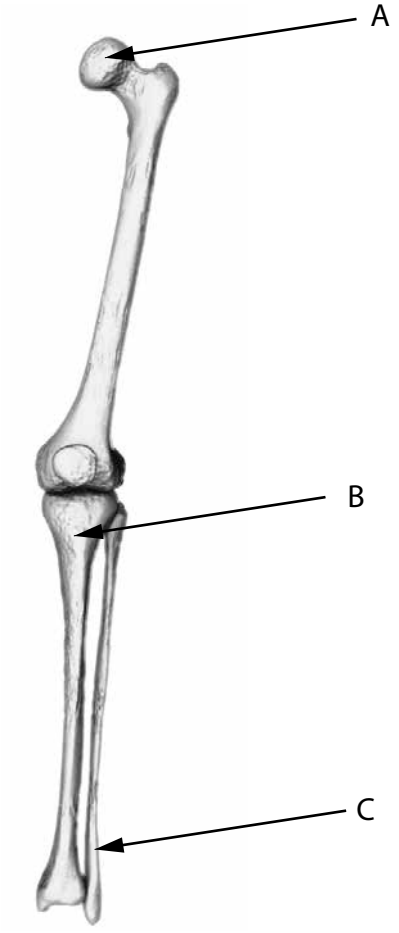


Figure 1

A .....

1 mark

B .....

1 mark

C .....

1 mark

Total for Question 2 = 3 marks

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Anita has the first stages of osteoporosis. She has been told to take part in exercise to help prevent this condition from getting worse.

3 (a) Identify **one** type of exercise that Anita could take part in to help prevent the osteoporosis from getting worse.

1 mark

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(b) Explain why weight bearing exercise will help to prevent the osteoporosis from getting worse.

3 marks

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Total for Question 3 = 4 marks

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4 Explain how movements at the hip joint allow the gymnast to achieve the position shown in the picture.



(Source: © Olga Bogatvrenko/Shutterstock)

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Total for Question 4 = 3 marks
TOTAL FOR SECTION A = 12 MARKS

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SECTION B: Muscular System for Sports Performance

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

Stephanie is a high jumper. She uses weighted lunges as part of her training as shown.



(Source: © Syda Productions/Shutterstock)

5 Explain how the use of weighted lunges would improve Stephanie's high jump performance.

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Total for Question 5 = 3 marks

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Two days after Stephanie's training session she experiences delayed onset of muscle soreness (DOMS).

6 (a) State why Stephanie's training may cause DOMS.

1 mark

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(b) Explain how muscle adaptation occurs as a result of Stephanie's training.

2 marks

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Total for Question 6 = 3 marks

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7 Describe an eccentric contraction.

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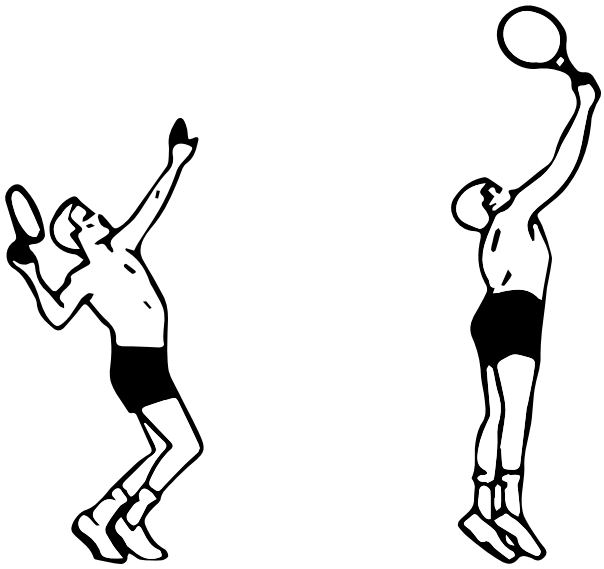
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Total for Question 7 = 2 marks

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8 Explain how the agonist muscles at the **elbow** allows the tennis player to complete the action in position A and position B.



Position A **Position B**

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Total for Question 8 = 3 marks
TOTAL FOR SECTION B = 11 MARKS

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SECTION C: The Respiratory System for Sports Performance

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

Yannick is a rugby player.

9 State the meaning of the term **total lung volume**.

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Total for Question 9= 2 marks

10 Give the total lung volume, including units, for an average healthy adult male.

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Total for Question 10 = 1 mark

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11 Explain the role of carbon dioxide in the chemical control of breathing during exercise.

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Total for Question 11 = 3 marks

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Endurance training results in adaptation to the respiratory system.

12 Explain how increasing the strength of the respiratory muscles aids performance in long distance cycling.

Total for Question 12 = 4 marks

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Julie is an 18 year old swimmer and has asthma.

13 Discuss the effects of participating in swimming on the respiratory system for an individual suffering with asthma.

Total for Question 13 = 6 marks
TOTAL FOR SECTION C = 16 MARKS

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SECTION D: The Cardiovascular System for Sports Performance

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

14 Describe the pathway of blood flow as it leaves the heart through the major blood vessels to the body and lungs.

Total for Question 14 = 4 marks

15 State the function of the bicuspid valve.

Total for Question 15 = 1 mark

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16 Explain how thermoregulation within the cardiovascular system helps to control body temperature during exercise.

Total for Question 16 = 4 marks

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Garcia is a basketball player. The table shows Garcia's heart rate at rest and then 1 minute before taking part in basketball.

Resting Heart Rate (bpm)	Heart rate 1 minute before taking part in basketball (bpm)
70	80

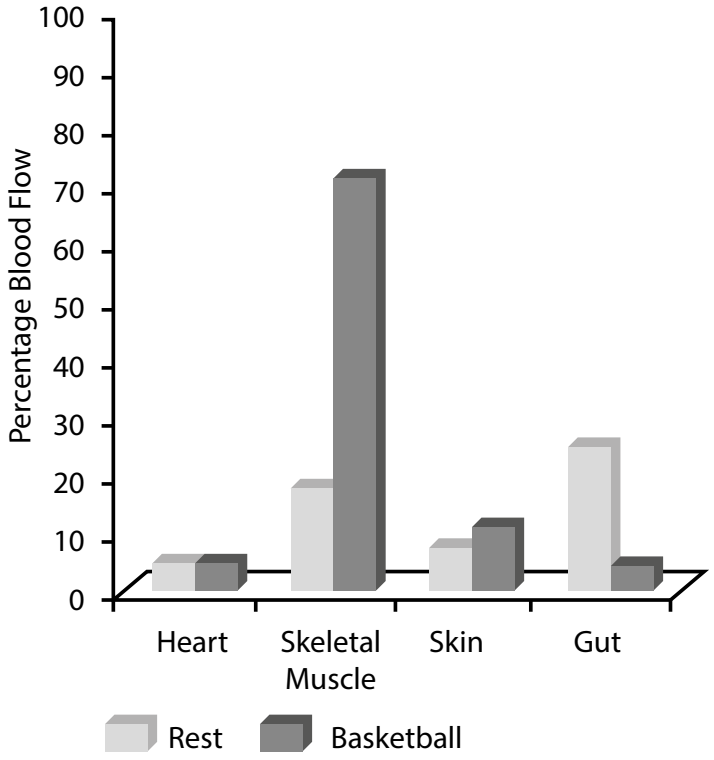
17 (a) Explain this change in Garcia's heart rate.

4 marks

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Garcia has been taking part in basketball training for over 6 months. In this time Garcia's resting heart rate has dropped from 78bpm to 70bpm.

The graph shows the percentage distribution of Garcia's blood when he is at rest compared to when he is playing basketball.



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(b) Using the graph, analyse why the distribution of blood changes when playing basketball.

6 marks

Total for Question 17 = 10 marks
TOTAL FOR SECTION D = 19 MARKS

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SECTION E: Energy Systems for Sports Performance

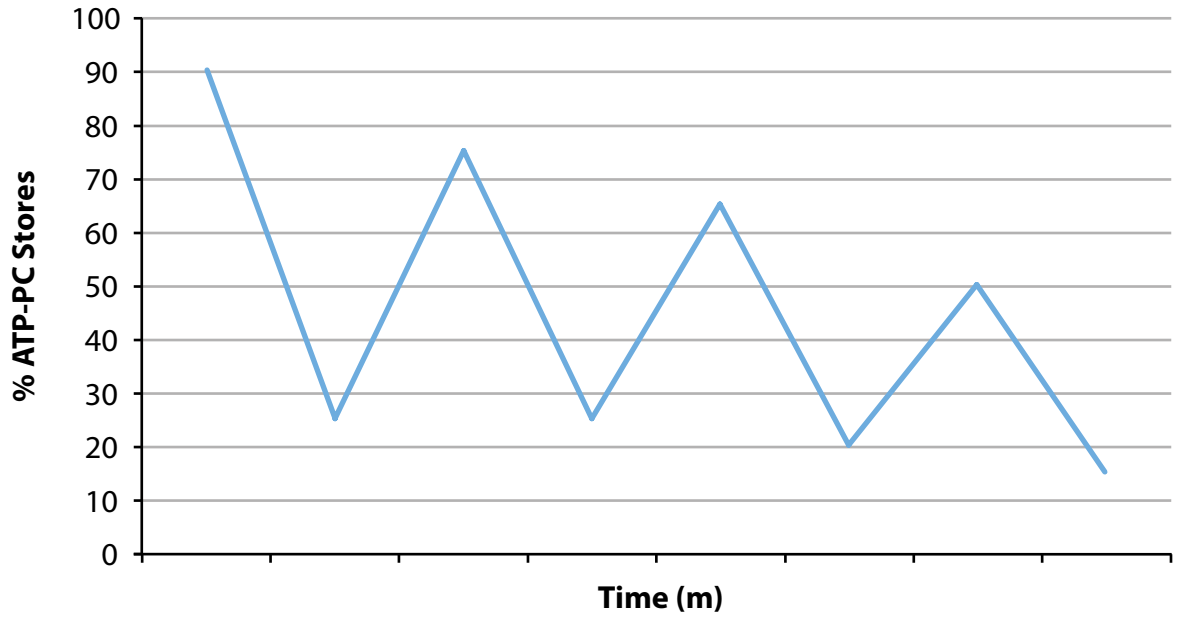
Answer ALL questions. Write your answers in the spaces provided.

18 Describe the process of ATP production from carbohydrates through the aerobic energy system.

Total for Question 18 = 5 marks

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The graph shows the ATP-PC stores in a performer's muscle whilst competing in a hockey match.



19 Explain why competing in a hockey match has this effect on muscle ATP-PC stores.

Total for Question 19 = 3 marks

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20 Evaluate the importance of the aerobic energy system for elite 100m sprinters in competition and training.

Total for Question 20 = 6 marks
TOTAL FOR SECTION E = 14 MARKS

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SECTION F: Interrelationships between Body Systems for Sports Performance

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

Suky is training for a marathon.

21 Analyse how adaptations to Suky's cardiorespiratory system could improve her marathon running performance.

END OF EXAM

Total for Question 21 = 8 marks
TOTAL FOR SECTION F = 8 MARKS
TOTAL FOR PAPER = 80 MARKS

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