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Surname					Other names					
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Sport and Exercise Science

Unit 2: Functional Anatomy

Thursday 15 June 2017 – Morning Time: 1 hour 30 minutes	Paper Reference 31814H
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You do not need any other materials.	Total Marks
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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 70.
- 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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Answer ALL questions. Write your answers in the spaces provided.

1 State **two** functions of the cardiovascular system.

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(Total for Question 1 = 2 marks)

2 Give the meaning of the following anatomical terms:

(a) distal

(1)

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(b) prone.

(1)

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(Total for Question 2 = 2 marks)

3 Explain the function of red blood cells.

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(Total for Question 3 = 2 marks)

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4 Describe the systole phase of the cardiac cycle.

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(Total for Question 4 = 4 marks)

Smooth muscle contraction is involuntary.

5 Explain how smooth muscle controls blood flow.

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6 Describe the mechanism of expiration during exercise.

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(Total for Question 6 = 5 marks)

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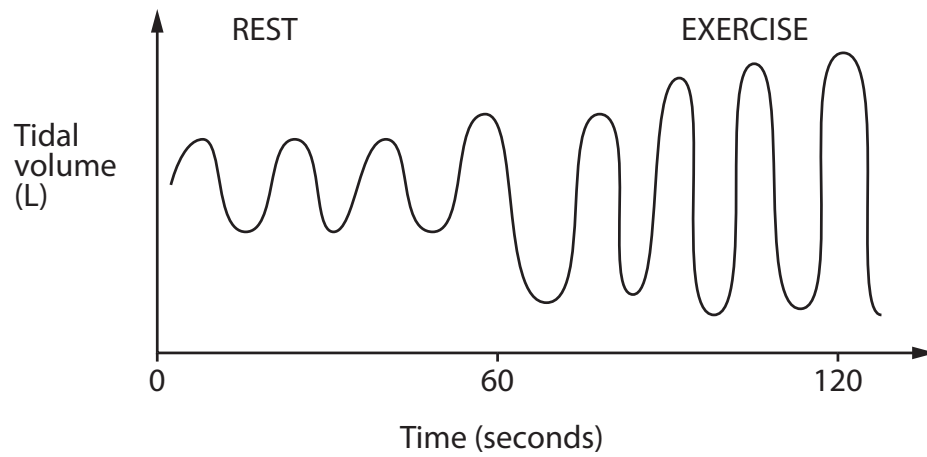


Figure 1

Figure 1 shows a spirometer trace of tidal volume during exercise participation.

7 Explain how the neural control of breathing affects tidal volume.

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(Total for Question 7 = 4 marks)



The skeletal system has many functions, including red blood cell production, supporting framework and movement.

8 Explain, using examples, **two other** functions of the skeletal system.

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(Total for Question 8 = 4 marks)

Bone remodelling is a lifelong process.

Bone remodelling renews skeletal tissue on a regular basis.

9 Explain the role of osteoclasts and osteoblasts during bone remodelling.

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(Total for Question 9 = 4 marks)

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P 5 1 7 7 8 R R A 0 7 1 6

Spencer is a cyclist.

He takes part in a long distance race.

He recruits different muscle fibre types to meet the changing demands of the race.

10 Analyse the neuromuscular control of muscle fibre type recruitment during Spencer's cycle race.

(10)

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(Total for Question 10 = 10 marks)



Figure 2 shows an athlete standing and in the squat position.

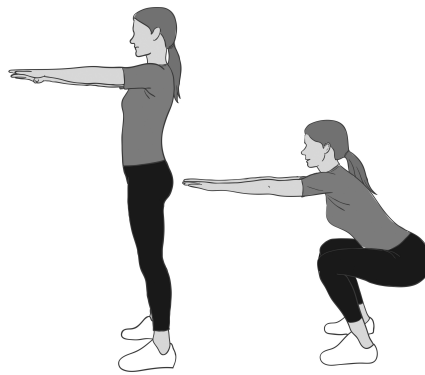


Figure 2

11 Analyse how the appendicular skeleton allows the range of movement necessary at the:

- hip
- knee
- ankle

to move from standing to the squat position.

(10)

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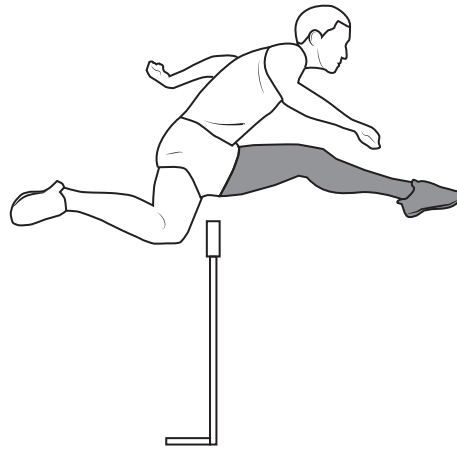
(Total for Question 11 = 10 marks)



Figure 3 shows the stages of a hurdler from preparation phase through to execution phase. The left leg is shaded.



preparation phase



execution phase

Figure 3

12 Analyse the required movement of the trunk, left knee and left ankle to achieve the position shown from preparation phase to execution phase.

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(Total for Question 12 = 20 marks)

TOTAL FOR PAPER = 70 MARKS

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