

Level 3 Cambridge Technical in Sport and Physical Activity

05826/05827/05828/05829/05872

Unit 1: Body systems and the effects of physical activity

Tuesday 16 May 2017 – Afternoon

Time allowed: 1 hour 30 minutes

You may use:

- a calculator

First Name

Last Name

Centre
Number

Candidate
Number

Date of
Birth

D

D

M

M

Y

Y

Y

Y

INSTRUCTIONS

- Use black ink.
- Complete the boxes above with your name, centre number, candidate number and date of birth.
- Answer **all** the questions.
- Write your answer to each question in the space provided.
- If additional answer space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.

INFORMATION

- The total mark for this paper is **70**.
- The marks for each question are shown in brackets [].
- Quality of written communication will be assessed in the question marked with an asterisk (*).
- This document consists of **16** pages.

FOR EXAMINER USE ONLY

Question No	Mark
Section A: 1-10	/10
Section B: 11	/6
12	/4
13	/4
14	/2
15	/4
16	/8
17	/3
18	/7
19	/6
20	/6
Section C: 21	/10
Total	/70

Section A

Answer **all** questions. Put a tick (✓) in the box next to the **one** correct answer for each question.

1 Which one of the following activities is both aerobic **and** anaerobic?

(a) Sprinting

☐

(b) Tennis

☐

(c) Triple jump

☐

(d) Weight lifting

☐

[1]

2 Which one of the following bones is **not** part of the axial skeleton?

(a) Cranium

☐

(b) Sternum

☐

(c) Scapula

☐

(d) Ribs

☐

[1]

3 Which one of the following muscles contracts to cause flexion at the knee?

(a) Biceps brachii

☐

(b) Rectus femoris

☐

(c) Biceps femoris

☐

(d) Vastus medialis

☐

[1]

4 Which one of the following is a long-term effect of regular physical exercise?

(a) Increased stroke volume

☐

(b) Increased heart rate

☐

(c) Increased muscle temperature

☐

(d) Decreased blood flow

☐

[1]

5 Which one of the following is a characteristic of slow twitch muscle fibres?

(a) Few capillaries

☐

(b) High phosphocreatine stores

☐

(c) Low myoglobin stores

☐

(d) Many mitochondria

☐

[1]

6 Which one of the following best describes the role of tendons?

(a) Attach muscles to bones

☐

(b) Attach muscles to muscles

☐

(c) Attach bones to bones

☐

(d) Attach ligaments to bones

☐

[1]

7 Which one of the following is an approximate resting value for the stroke volume of an untrained individual?

(a) 30 ml

☐

(b) 70 ml

☐

(c) 300 ml

☐

(d) 700 ml

☐

[1]

8 Which one of the following muscles does **not** act at the shoulder joint?

(a) Deltoid

☐

(b) Trapezius

☐

(c) Teres major

☐

(d) Iliopsoas

☐

[1]

9 What type of joint is the hip?

..... [1]

10 What mechanism describes the redistribution of blood around the body during exercise?

..... [1]

Section B

Answer **all** questions.

- 11** Describe the following functions of the skeleton. Give an example of each.

Protection

.....

.....

.....

Movement

.....

.....

.....

Blood cell production

.....

.....

.....

[6]

- 12** Fig. 12.1 shows a diagram of the vertebral column.

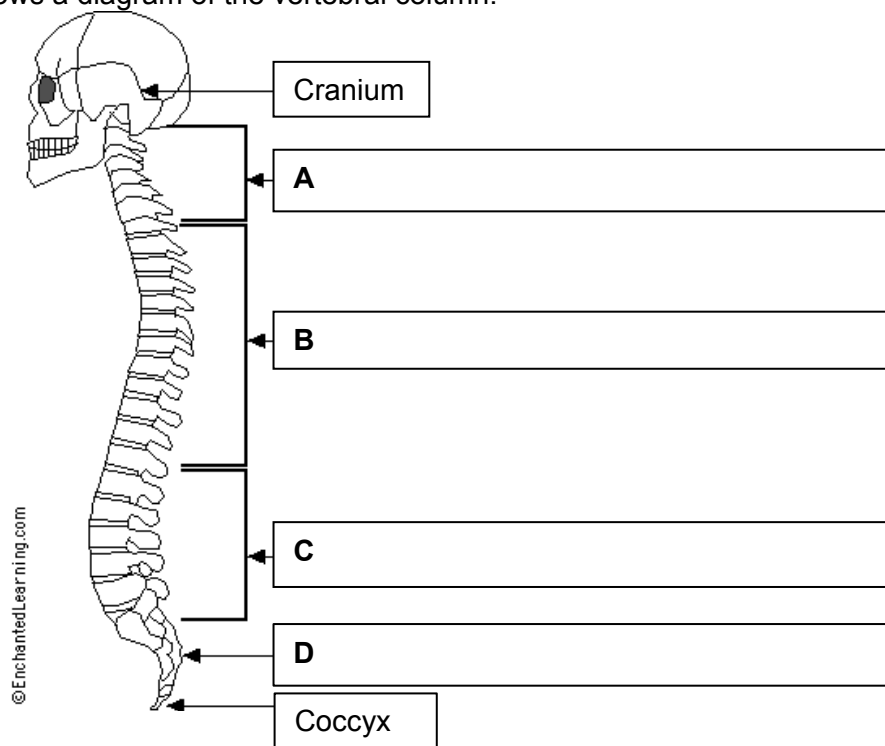


Fig. 12.1

Label the sections of the vertebral column A-D in the boxes provided on **Fig 12.1** above. [4]

13 Fig. 13.1 shows a diagram of a synovial joint.

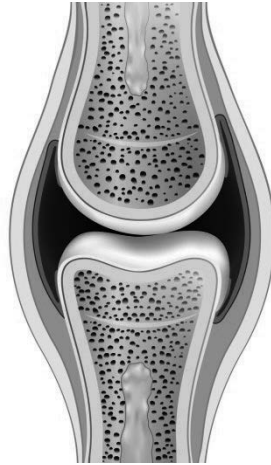


Fig. 13.1

Identify **two** structures of the joint and explain their functions.

.....

.....

.....

.....

.....

..... [4]

14 Outline **two** long-term benefits of regular exercise on the skeletal system.

.....

.....

.....

..... [2]

15 The following paragraph describes the structure and function of fast glycolytic fibres.

Complete the paragraph by selecting words from the box below.

Fewer	High	Weak	Strong	Many	Large	Small	Low
-------	------	------	--------	------	-------	-------	-----

Fast twitch glycolytic fibres are used in activities that are intensity and require a very force of contraction. This is because the size of the motor neurone is and there are fibres per motor unit. [4]

16 Fig. 16.1 shows a basketball player taking a shot.



Fig. 16.1

The elbow extends during the performance of the basketball shot.

- (a)** Identify **two** muscles acting at the elbow and **two** muscles acting at the wrist during the shot.

Elbow

Elbow

Wrist

Wrist

[4]

- (b)** Explain how the muscles at the elbow work together as an antagonistic pair during the basketball shot.

.....

.....

.....

.....

.....

.....

.....

..... **[4]**

17 Identify **three** short-term effects of exercise on the cardiovascular system.

.....

.....

..... [3]

18 Fig. 18.1 shows a diagram of the respiratory system.

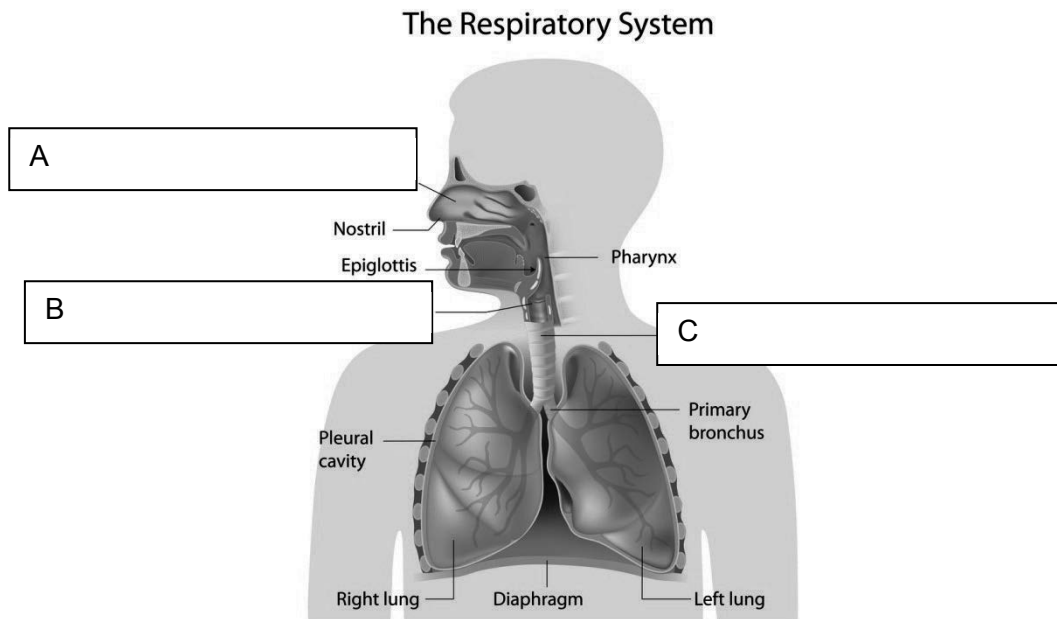


Fig. 18.1

(a) Label structures A-C in the boxes provided on the diagram.

[3]

(b) Explain the role of the diaphragm as a respiratory muscle.

.....

.....

.....

.....

.....

.....

.....

.....

.....

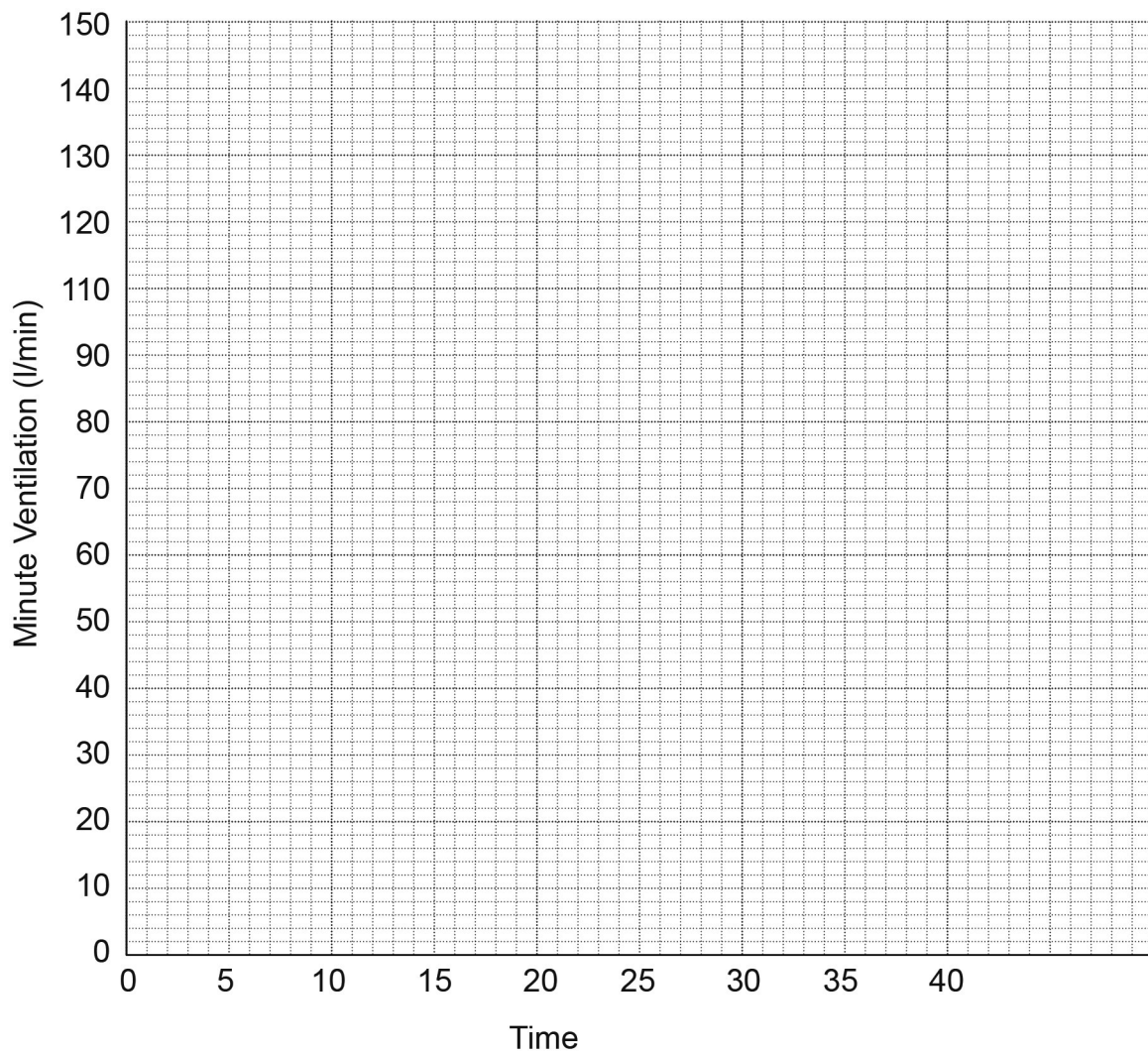
..... [4]

- 19** Table 19.1 shows the minute ventilation of a trained and untrained cyclist during a 30 minute cycle race and for a 10 minute recovery period.

Time (minutes)	Minute ventilation (l/min)	
	Trained cyclist	Untrained cyclist
0	6	6
1	50	30
2	100	30
3	130	60
4	150	70
5	150	80
10	150	80
20	150	80
30	150	80
32	60	70
36	10	40
40	6	10

Table 19.1

- (a) Plot graphs for the trained and untrained cyclist on the graph below, using the data in table 19.1.



[4]

Turn over

- (b) Explain why the trained cyclist can reach a higher minute ventilation than the untrained cyclist during exercise.

.....

.....

.....

..... [2]

- 20** During a football match a player will use all three energy systems.

For example, during periods of high intensity work such as sprinting up and down the pitch continuously for 30 seconds the player will be using the lactic acid system.

Explain, using a sporting example, why a player would use the following systems.

- (a) ATP-PC system

.....

.....

.....

.....

.....

..... [3]

- (b) Aerobic system

.....

.....

.....

.....

.....

..... [3]

Your answer should include:

- [10]**

[illegible]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

Copyright Information:

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.